Postgraduate Certificate
Intrusion Detection and Prevention Using Generative Artificial Intelligence Models

tech global university

Postgraduate Certificate
Intrusion Detection and Prevention Using Generative Artificial Intelligence Models

- » Modality: **online**
- » Duration: **6 weeks**
- » Certificate: **TECH Global University**
- » Accreditation: **6 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/us/artificial-intelligence/postgraduate-certificate/intrusion-detection-prevention-using-generative-artificial-intelligence-models**
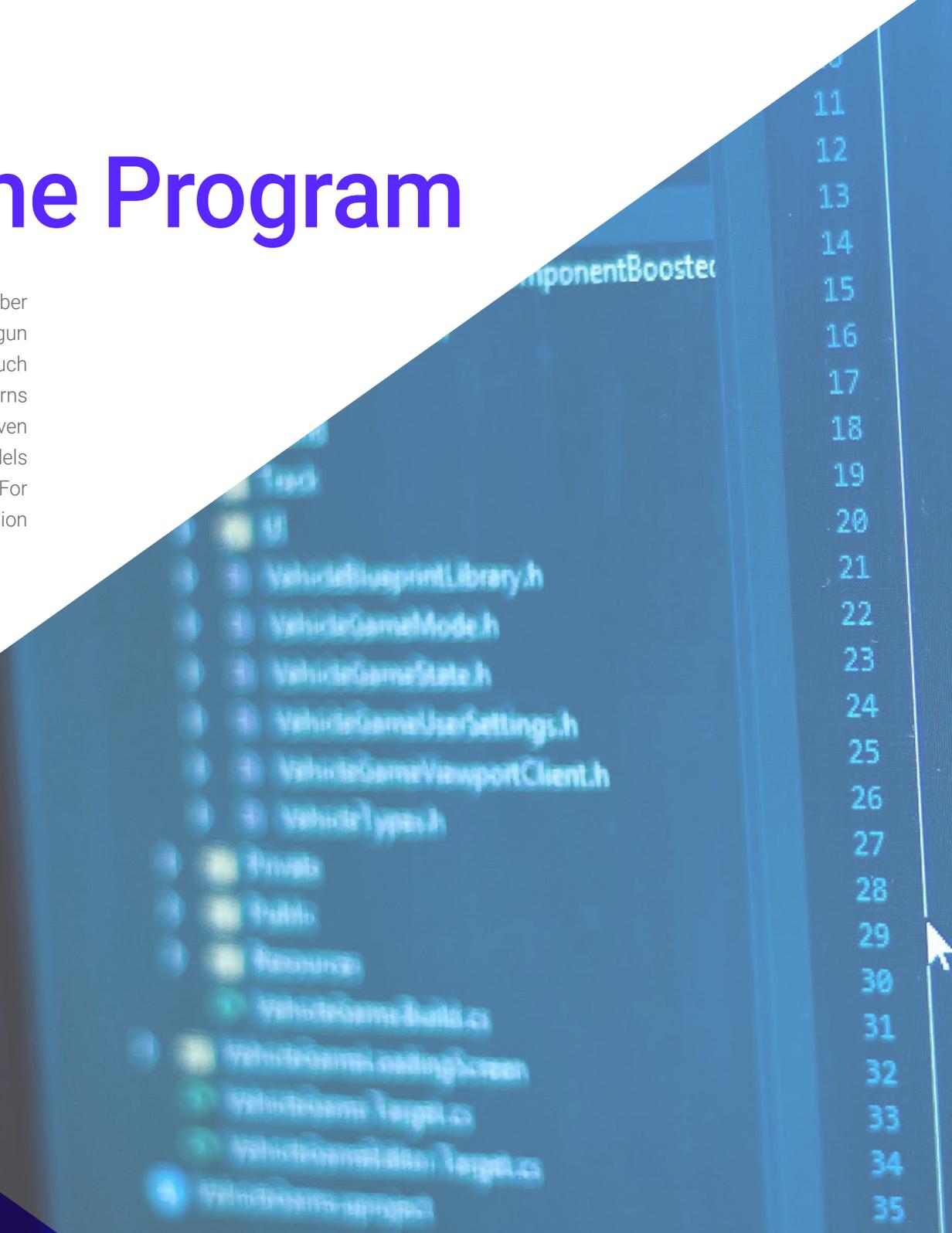
Index

01
Introduction to the Program

The rise of advanced cyber-attacks has outpaced the capabilities of traditional cyber defense solutions. To meet this challenge, Generative Artificial Intelligence has begun to play a crucial role in intrusion detection and prevention. Through techniques such as deep learning and generative models, it is possible to identify anomalous patterns in large volumes of data and foresee possible intrusions before they occur. Given this, professionals need to have a solid understanding of how Generative Models can improve cybersecurity by generating synthetic data that simulates attacks. For this reason, TECH launches an innovative university program focused on Intrusion Detection and Prevention Using Generative Artificial Intelligence Models.

Through this 100% online Postgraduate Certificate, you will master the most advanced techniques of Intrusion Prevention using Generative Artificial Intelligence Models"

A new report prepared by the United Nations highlights that 68% of companies globally reported an increase in cyber-attacks during the last few months. This increase in the frequency and sophistication of attacks has surpassed the capabilities of traditional cybersecurity solutions. In this context, Generative Artificial Intelligence offers a significant advantage by generating synthetic data that simulates attacks and improves the accuracy of intrusion detection systems. Hence the importance for professionals to apply Generative Models such as generative adversarial networks to optimize cyber defenses.

With this in mind, TECH presents a pioneering Postgraduate Certificate in Intrusion Detection and Prevention Using Generative Artificial Intelligence Models. Designed by renowned specialists in this field, the academic itinerary will delve into areas ranging from the use of generative techniques to recreate attack scenarios or the use of Gemini to detect anomalies in networks to advanced big data techniques for Intrusion prevention. Thanks to this, students will gain the necessary skills to design and implement advanced solutions for intrusion detection and prevention using generative Artificial Intelligence models.

Furthermore, TECH has created a 100% online academic environment. In this way, experts will be able to individually manage their schedules and evaluation timetables. It also implements its disruptive Relearning method, based on the repetition of key concepts to consolidate knowledge in an optimal way. Thanks to this, specialists will enjoy a dynamic and enjoyable immersive experience that will contribute to maximize the quality of their daily practice. In this sense, the only thing students will require is an electronic device with an Internet connection to enter the Virtual Campus. On this platform, they will enjoy access to a library full of multimedia support pills such as explanatory videos, interactive summaries or specialized readings.

This Postgraduate Certificate in Intrusion Detection and Prevention Using Generative Artificial Intelligence Models contains the most complete and up-to-date educational program on the market. Its most notable features are:

- Development of practical cases presented by experts in Artificial Intelligence
- The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable 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

You will analyze the use of Generative Artificial Intelligence to implement innovative solutions that accurately detect threats"

"*You will delve into the development of intelligent systems to ensure their effectiveness and adaptability in the face of emerging cyber threats*"

You will specialize in the simulation of cyber attacks with state-of-the-art Generative Models.

At your own speed: the Relearning methodology used in this Postgraduate Certificate will allow you to learn in an autonomous and progressive way. At your own speed!

The program's teaching staff includes professionals from the field who contribute their work experience to this educational 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 course. For this purpose, students will be assisted by an innovative interactive video system created by renowned experts.

02
Why Study at TECH?

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

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

The world's best online university, according to FORBES

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

The best top international faculty

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

The world's largest online university

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

Forbes
The best online university in the world

The most complete **syllabus**

TOP international faculty

The most effective methodology

World's No.1 The World's largest online university

The most complete syllabuses on the university scene

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

A unique learning method

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

The official online university of the NBA

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

Leaders in employability

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

G
Google Partner
PREMIER 2023

NBA
The Official
Online University
of the **NBA**

4.9/5
★★★★★
★global score

99%
maximun
employability
guaranteed

Google Premier Partner

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

The top-rated university by its students

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

03

Syllabus

The academic itinerary will delve into subjects ranging from the use of Gemini for network anomaly detection or the application of generative models in the simulation of attacks to the most sophisticated clustering techniques. In this way, students will be able to develop and implement advanced Artificial Intelligence models to detect intrusions in real time, create proactive defense systems and predict malicious behavior in networks.
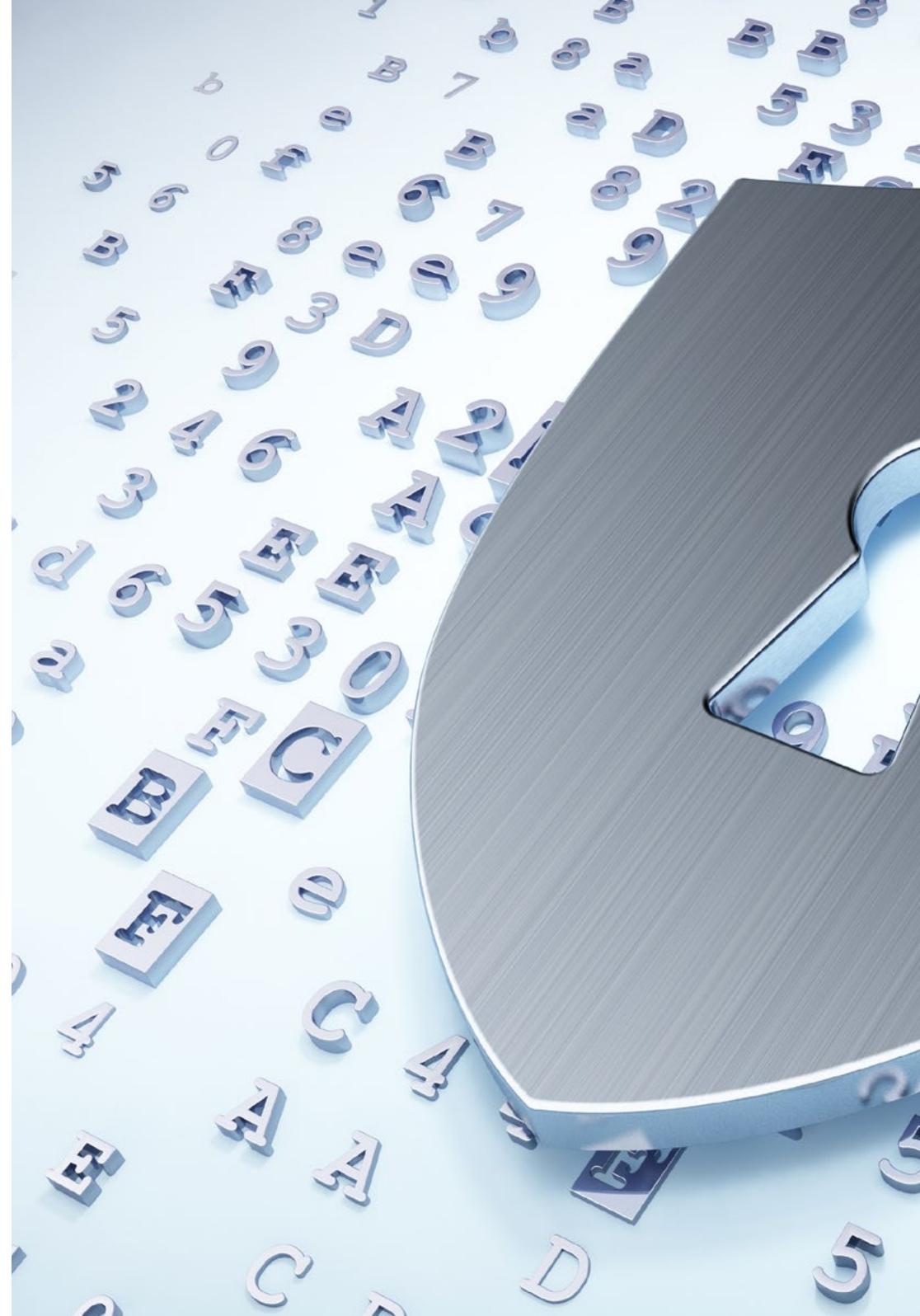
You will use precision metrics to tune and improve Intrusion Detection systems"

Module 1. Intrusion Detection and Prevention Using Generative Artificial Intelligence Models

1.1.   Fundamentals of IDS/IPS Systems and the Role of Artificial Intelligence

1.1.1.   Definition and Basic Principles of IDS and IPS Systems

1.1.2.   Main Types and Configurations of IDS/IPS

1.1.3.   Contribution of Artificial Intelligence in the Evolution of Detection and Prevention Systems

1.2.   Use of Gemini for Network Anomaly Detection

1.2.1.   Concepts and Types of Anomalies in Network Traffic

1.2.2.   Gemini's Features for Network Data Analysis

1.2.3.   Benefits of Anomaly Detection in Intrusion Prevention

1.3.   Gemini and the Identification of Intrusion Patterns

1.3.1.   Principles of Intrusion Pattern Identification and Classification

1.3.2.   AI Techniques Applied in the Detection of Threat Patterns

1.3.3.   Types of Patterns and Anomalous Behavior in Network Security

1.4.   Application of Generative Models in Attack Simulation

1.4.1.   Fundamentals of Generative Models in Artificial Intelligence

1.4.2.   Use of Generative Models to Recreate Attack Scenarios

1.4.3.   Advantages and Limitations of Attack Simulation Using Generative Artificial Intelligence

1.5.   Clustering and Event Classification Using Artificial Intelligence

1.5.1.   Fundamentals of Clustering and Classification in Intrusion Detection

1.5.2.   Common Clustering Algorithms Applied in Cybersecurity

1.5.3.   Role of Artificial Intelligence in Improving Event Classification Methods

1.6.   Gemini in the Generation of Behavioral Profiles

1.6.1.   User and Device Profiling Concepts

1.6.2.   Application of Generative Models in the Creation of Profiles

1.6.3.   Benefits of Behavioral Profiling in Threat Detection

By studying through videos, interactive summaries or evaluative tests, you will assimilate all the knowledge in a fast and enjoyable way"

Teaching Objectives

Through this Postgraduate Certificate, professionals will acquire the necessary skills to develop advanced solutions in Intrusion Detection and Prevention through the use of Generative Artificial Intelligence. In this way, students will be able to design and implement cybersecurity systems capable of anticipating and mitigating threats in real time. In addition, they will be able to analyze large volumes of data to identify attack patterns, simulate intrusion scenarios and evaluate the effectiveness of their defense models.
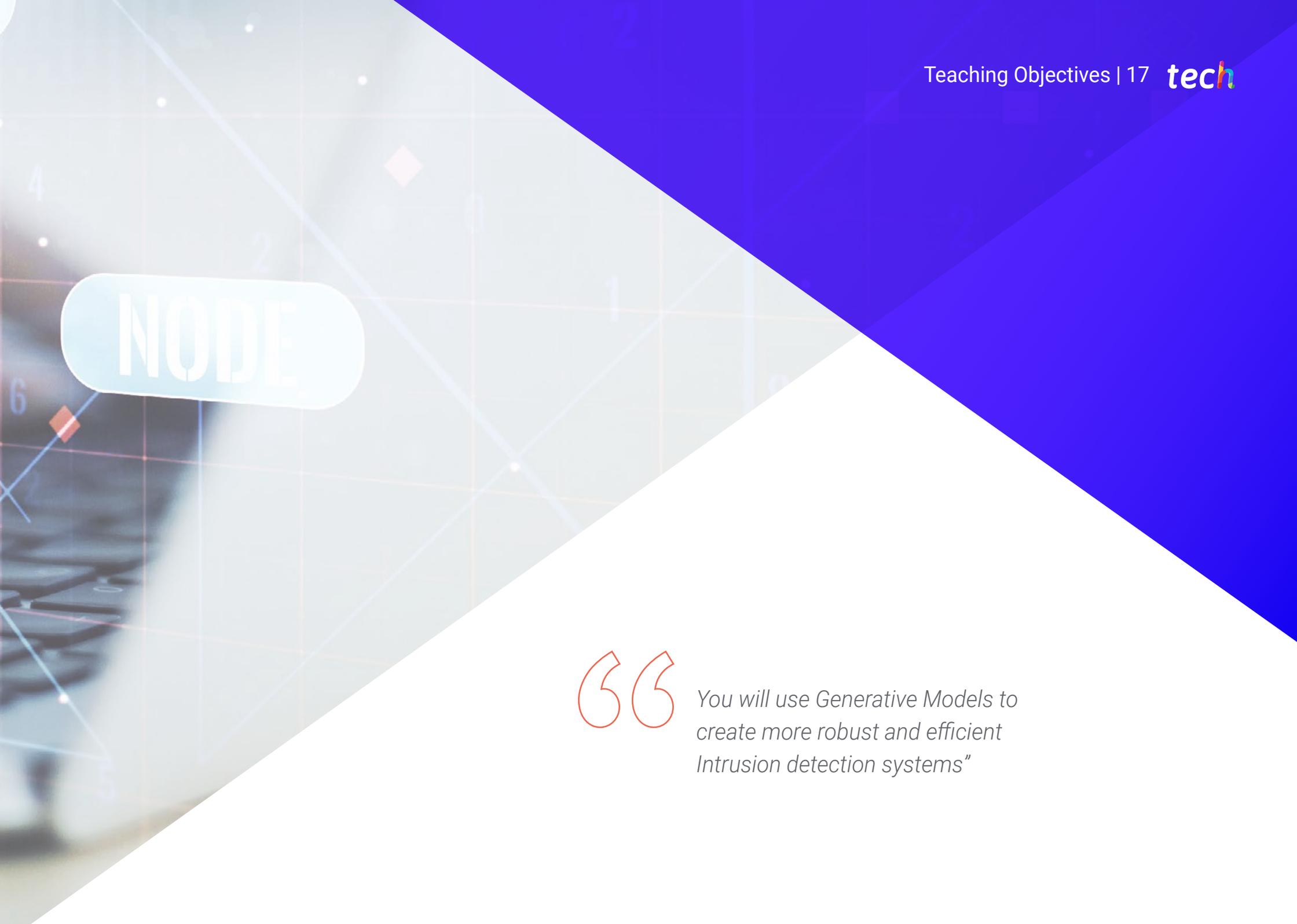
You will use Generative Models to create more robust and efficient Intrusion detection systems"

General Objectives

- Understand the theoretical and practical fundamentals of intrusion detection and prevention systems in digital environments

- Explore the role of Generative Artificial Intelligence in identifying threats and simulating attack scenarios

- Analyze large volumes of data to detect anomalies and suspicious behaviors in complex networks

- Apply advanced clustering and classification techniques to improve accuracy in detecting security events

- Implement tools such as Gemini for pattern analysis and behavioral profiling in network environments

- Integrate dimensionality reduction and feature selection techniques to optimize data processing efficiency

- Evaluate and validate Artificial Intelligence models in Cybersecurity systems, guaranteeing their adaptability to new threats

- Design innovative strategies for the implementation of intrusion detection systems based on generative Artificial Intelligence

Specific Objectives

- Master anomaly and intrusion pattern detection techniques with tools such as Gemini

- Apply generative models to simulate cyber-attacks and improve intrusion prevention

- Implement advanced IDS/IPS systems optimized with Artificial Intelligence, developing behavioral profiles and analyzing Big Data in real-time

- Design integrated security architectures with Artificial Intelligence for the protection of multi-user environments and distributed systems

- Use generative models to anticipate targeted attacks and elaborate countermeasures in real time

- Integrate predictive analytics into detection systems for dynamic management of emerging threats

You will lead advanced Cybersecurity projects, managing IDS/IPS systems with solutions based on Generative Artificial Intelligence"

05
Study Methodology

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

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

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

The student: the priority of all TECH programs

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

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

At TECH you will NOT have live classes (which you might not be able to attend)"
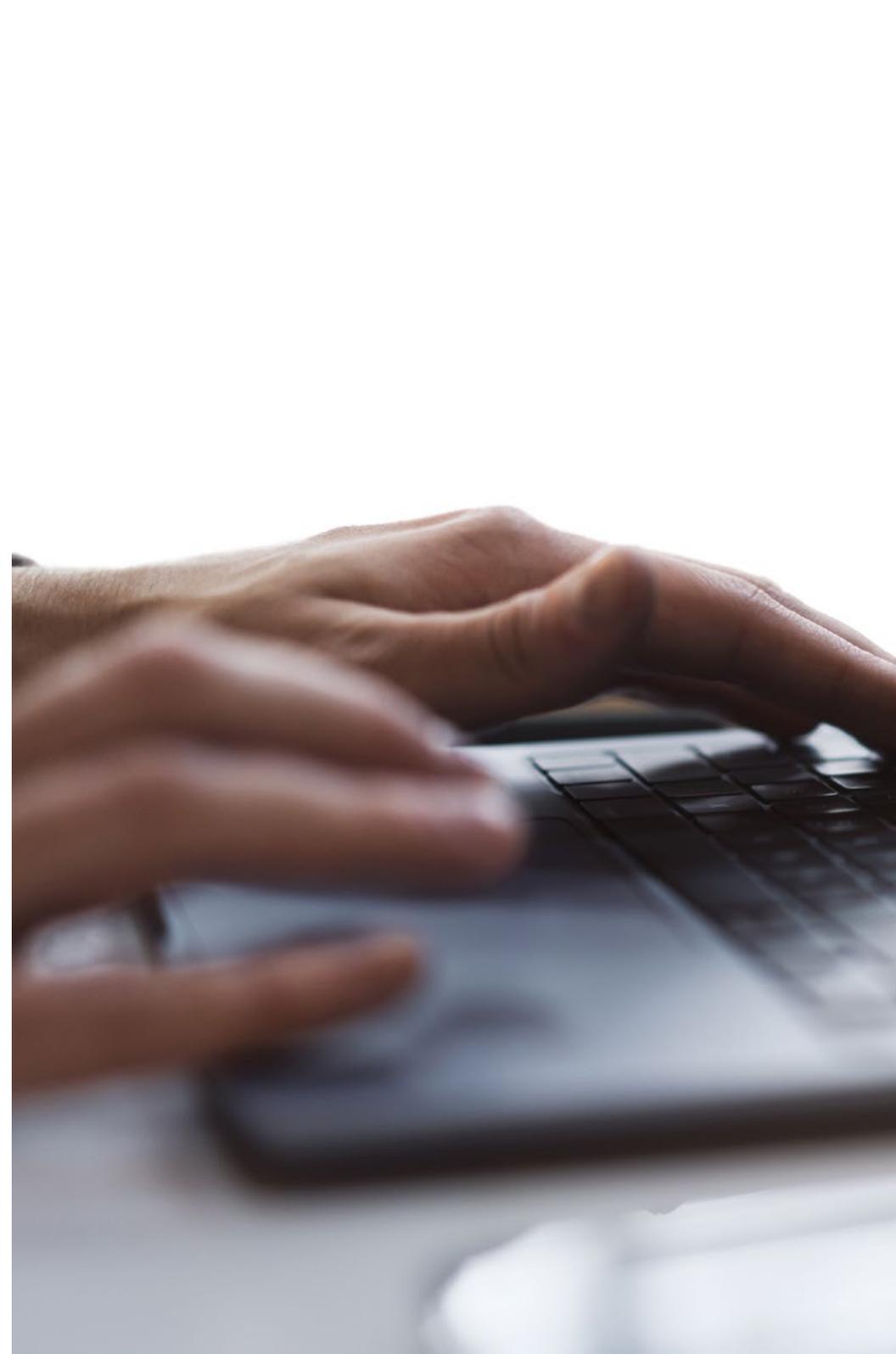
The most comprehensive study plans at the international level

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

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

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

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

Case Studies and Case Method

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

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

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

Relearning Methodology

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

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

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

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

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

A 100% online Virtual Campus with the best teaching resources

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

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

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

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

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

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

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.

2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.

3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.

4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

The university methodology top-rated by its students

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

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

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

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

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

Study Material

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

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

Practicing Skills and Abilities

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

Interactive Summaries

We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge. This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

Additional Reading

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

20%

15%

15%

3%

20%

17%

7%

3%
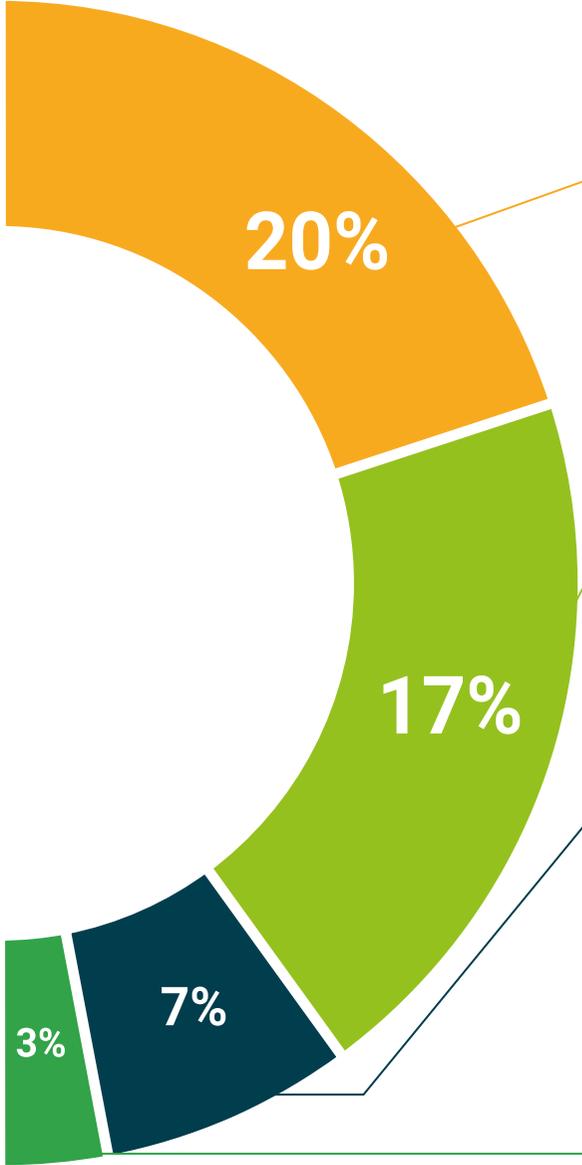
Case Studies

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

Testing & Retesting

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

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.
Learning from an expert strengthens knowledge and memory, and generates confidence for future difficult decisions.

Quick Action Guides

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

06

Teaching Staff

For the design and delivery of this Postgraduate Certificate, TECH has acquired the services of authentic references in Intrusion Detection and Prevention Using Generative Artificial Intelligence Models. Thanks to this, they have developed a wide range of didactic contents characterized by their high quality and adaptation to the requirements of the current labor market. In this way, students will enter into a high intensity experience that will allow them to significantly increase their professional horizons.

"
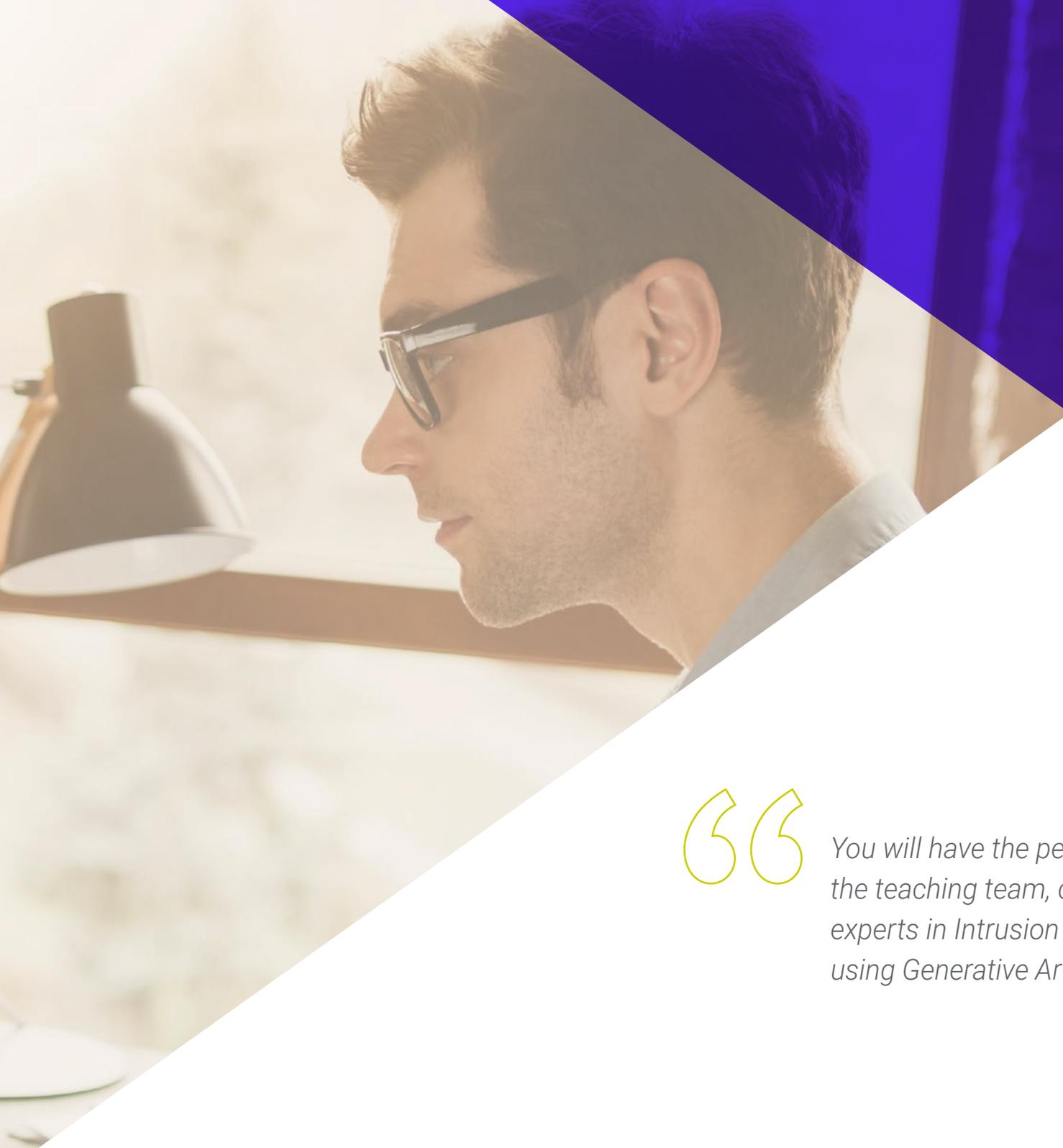
You will have the personalized guidance of the teaching team, composed of recognized experts in Intrusion Detection and Prevention using Generative Artificial Intelligence Models"

Management

Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO at Korporate Technologies
- CTO at AI Shepherds GmbH
- Consultant and Strategic Business Advisor at Alliance Medical
- Director of Design and Development at DocPath
- Doctorate in Psychology from the University of Castilla La Mancha
- Doctorate in Economics, Business and Finance from the Camilo José Cela University
- Doctorate in Psychology from University of Castilla La Mancha
- Master's Degree in Executive MBA from the Isabel I University
- Master's Degree in Sales and Marketing Management from the Isabel I University
- Expert Master's Degree in Big Data by Hadoop Training
- Master's Degree in Advanced Information Technologies from the University of Castilla La Mancha
- Member of: SMILE Research Group

Professors

Mr. Del Rey Sánchez, Alejandro

- In Charge of Implementing Programs to Improve Tactical Emergency Care
- Degree in Industrial Organization Engineering
- Certification in Big Data and Business Analytics
- Certification in Microsoft Excel Advanced, VBA, KPI and DAX
- Certification in CIS Telecommunication and Information Systems

Ms. Del Rey Sánchez, Cristina

- Talent Management Administrator at Securitas Seguridad España, S.L.
- Extracurricular Activities Center Coordinator
- Support classes and pedagogical interventions with Primary and Secondary Education students
- Postgraduate in Development, Delivery and Tutoring of e-Learning Training Actions
- Postgraduate in Early Childhood Care
- Degree in Pedagogy from the Complutense University of Madrid

A unique, crucial and decisive learning experience to boost your professional development"

Certificate

This Postgraduate Certificate in Intrusion Detection and Prevention Using Generative Artificial Intelligence Models guarantees, in addition to the most rigorous and up-to-date program, access to an Postgraduate Certificate diploma issued by TECH Global University.

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

This private qualification will allow you to obtain a diploma for the **Postgraduate Certificate in Intrusion Detection and Prevention Using Generative Artificial Intelligence Models** endorsed by **TECH Global University,** the world's largest online university.

TECH Global University, is an official European University publicly recognized by the Government of Andorra *(official bulletin)*. Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.
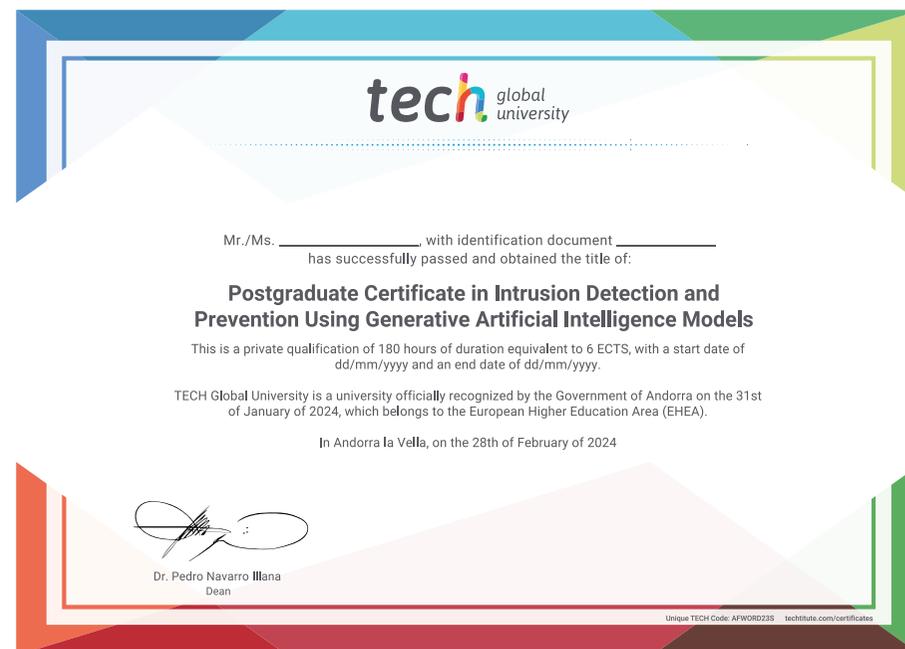
This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Intrusion Detection and Prevention Using Generative Artificial Intelligence Models**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**

---

tech global university

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

Postgraduate Certificate in Intrusion Detection and Prevention Using Generative Artificial Intelligence Models

This is a private qualification of 180 hours of duration equivalent to 6 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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

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

Dr. Pedro Navarro Illana
Dean

Unique TECH Code: AFWORD23S   techtitute.com/certificates

---

*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.

Postgraduate Certificate

Intrusion Detection and Prevention Using Generative Artificial Intelligence Models

- » Modality: **online**
- » Duration: **6 weeks**
- » Certificate: **TECH Global University**
- » Accreditation: **6 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

Postgraduate Certificate
Intrusion Detection and Prevention Using Generative Artificial Intelligence Models

tech global university