Postgraduate Certificate

Simulation and Predictive Modeling with Artificial Intelligence

tech global university

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Postgraduate Certificate
Simulation and Predictive Modeling with Artificial Intelligence

- 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/simulation-predictive-modeling-artificial-intelligence**

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01

Introduction

The field of architecture faces the challenge of designing sustainable and efficient buildings that respond to the growing demands of modern cities. Simulation and Predictive Modeling using Artificial Intelligence have become essential tools that allow experts to anticipate and evaluate the performance of their designs before the construction process. Therefore, it is important for professionals to implement these instruments to the architectural design to significantly reduce energy consumption and improve the quality of life of the occupants. In this framework, TECH launches an innovative university program focused on Simulation and Predictive Modeling with Artificial Intelligence. It is also taught in a convenient 100% online mode.

Thanks to this 100% online Postgraduate Certificate, you will use Predictive Modeling techniques to maximize the energy efficiency of architectural projects"

A new report prepared by the International Association of Architects reflects that the adoption of Artificial Intelligence in architectural design leads to a 20% reduction in construction costs and a significant improvement in the sustainability of buildings. Faced with this, specialists need to acquire advanced skills to use Simulation and Predictive Modeling tools to create more efficient buildings. Only in this way, architects will be able to anticipate and evaluate the performance of their designs under various conditions.

In this context, TECH launches an exclusive program in Simulation and Predictive Modeling with Artificial Intelligence. Devised by references in this subject, the academic itinerary will deepen the use of MATLAB to carry out advanced simulations. This will allow students to perform complex structural analysis to evaluate how different materials and shapes are subjected to dynamic loads. The curriculum will also delve into the use of AnyLogic to model the dynamics of space use and human mobility. In addition, the didactic materials will offer numerous case studies that will analyze how simulation influences urban and architectural planning. In this way, graduates will develop skills to use Simulation and Predictive Modeling software to predict the behavior of architectural designs.

On the other hand, the university program will be taught 100% online, with no continuous evaluation schedules or timetables. In addition, each graduate will have the opportunity to access the didactic contents freely, according to their own availability and at any time of the day. For the assimilation of the most complex contents of this academic proposal, TECH uses its revolutionary Relearning system. This method will enhance the absorption of theoretical knowledge and the development of practical skills in a more efficient way.

This **Postgraduate Course in Simulation and Predictive Modeling with Artificial Intelligence** contains the most complete and up-to-date program on the market. The most important features include:

- Development of practical cases presented by experts in Artificial Intelligence
- The graphic, schematic, and practical contents with which they are created, provide 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

An academic institution that adapts to you and designs a program that will allow you to reconcile your daily activities with a quality program"

Are you looking to use COMSOL to perform environmental simulations of large-scale projects? Achieve it through this university program in just 6 weeks"

You will delve into the use of Artificial Intelligence to optimize the design based on natural light and acoustic simulations.

With TECH's revolutionary Relearning methodology, you will integrate all the knowledge in an optimal way to successfully achieve the results you are looking for.

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 in the field of educational coaching with extensive experience.

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Objectives

Through this Postgraduate Certificate, professionals will acquire advanced skills to handle Simulation and Predictive Modeling software with Artificial Intelligence to predict the behavior of architectural designs. At the same time, graduates will be able to carry out structural simulations that evaluate how different materials respond to loads, climatic conditions and other critical factors. In addition, students will perform life cycle analysis of materials, evaluating their environmental impact and helping to make more sustainable decisions in architectural design.

You will use Predictive Modeling techniques to optimize the use of resources in architectural design, looking for solutions that maximize energy efficiency"

General Objectives

- Understand the theoretical foundations of Artificial Intelligence
- Study the different types of data and understand the data lifecycle
- Evaluate the crucial role of data in the development and implementation of AI solutions
- Delve into algorithms and complexity to solve specific problems
- Explore the theoretical basis of neural networks for Deep Learning development
- Explore bio-inspired computing and its relevance in the development of intelligent systems
- Manage advanced Artificial Intelligence tools to optimize architectural processes such as parametric design
- Apply Generative Modeling techniques to maximize efficiency in infrastructure planning and improve the energy performance of buildings

Specific Objectives

- Employ programs such as TensorFlow, MATLAB or ANSYS to perform simulations that anticipate structural and environmental behavior in architectural projects
- Implement predictive modeling techniques to optimize urban planning and space management, using AI to improve accuracy and efficiency in strategic decision making

You will learn valuable lessons through real cases in simulated learning environments"

03

Course Management

TECH's fundamental premise is to make available to anyone the most complete and updated university degrees in the academic panorama, which is why it carries out a meticulous process to form its teaching staff. These experts have created a wide variety of teaching materials that stand out both for their high quality and for adapting to the demands of today's labor market. In this way, graduates will have access to an immersive experience that will enable them to significantly improve their job prospects.

The teaching team of this university program is composed of authentic references in Simulation and Predictive Modeling with Artificial Intelligence"

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
- PhD in Psychology from the University of Castilla La Mancha
- PhD in Economics, Business and Finance from the Camilo José Cela University
- PhD 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, 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

Dr. Carrasco Aguilar, Álvaro

- Sales & Marketing Coordinator at LionLingo
- Researcher in Information Technology Management
- PhD in Social and Health Research: Technical and Economic Evaluation of Technologies, Interventions and Policies Applied to Health Improvement from the University of Castilla La Mancha
- Master's Degree in Social and Health Research from the University of Castilla La Mancha
- Degree in Political Science and Administration at the University of Granada
- Award for "Best Scientific Article for Technological Innovation for the Efficiency of Health Expenditure"
- Regular speaker at international scientific congresses

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

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Structure and Content

The curriculum will delve into the most advanced MATLAB simulation techniques, enabling professionals to model building energy consumption to optimize resource use and comply with sustainability regulations. The syllabus will also delve into the use of AnyLogic to model the dynamics of space use and human mobility. Along the same lines, the didactic materials will analyze the implementation of TensorFlow to model urban dynamics and structural behavior.

You will apply Predictive Models that simulate energy performance, ventilation and daylighting of buildings to improve the sustainability of architectural designs"

Module 1. Simulation and Predictive Modeling with Artificial Intelligence

1.1. Advanced Simulation Techniques with MATLAB in Architecture
- 1.1.1. Using MATLAB for Advanced Architectural Simulations
- 1.1.2. Integrating Predictive Modeling and Big Data Analytics
- 1.1.3. Case Studies Where MATLAB Has Been Fundamental in Architectural Simulation

1.2. Advanced Structural Analysis with ANSYS
- 1.2.1. Implementing ANSYS for Advanced Structural Simulations in Architectural Projects
- 1.2.2. Integrating Predictive Models to Evaluate Structural Safety and Durability
- 1.2.3. Projects Highlighting the Use of Structural Simulations in High Performance Architecture

1.3. Modeling Space Use and Human Dynamics with AnyLogic
- 1.3.1. Using AnyLogic to Model the Dynamics of Space Use and Human Mobility
- 1.3.2. Applying AI to Predict and Improve the Efficiency of Space Use in Urban and Architectural Environments
- 1.3.3. Case Studies Showing How Simulation Influences Urban and Architectural Planning

1.4. Predictive Modeling with TensorFlow in Urban Planning
- 1.4.1. Implementing TensorFlow for Modeling Urban Dynamics and Structural Behavior
- 1.4.2. Using AI to Predict Future Outcomes in City Design
- 1.4.3. Examples of How Predictive Modeling Influences Urban Planning and Design

1.5. Predictive Modeling and Generative Design with GenerativeComponents
- 1.5.1. Using GenerativeComponents to Merge Predictive Modeling and Generative Design
- 1.5.2. Applying Machine Learning Algorithms to Create Innovative and Efficient Designs
- 1.5.3. Examples of Architectural Projects that Have Optimized Their Design Using These Advanced Technologies

1.6. Simulation of Environmental Impact and Sustainability with COMSOL
- 1.6.1. Applying COMSOL for Environmental Simulations in Large-Scale Projects
- 1.6.2. Using AI to Analyze and Improve the Environmental Impact of Buildings
- 1.6.3. Projects that Show How Simulation Contributes to Sustainability

1.7. Simulation of Environmental Performance with COMSOL
- 1.7.1. Applying COMSOL Multiphysics for Environmental and Thermal Performance Simulations
- 1.7.2. Using AI to Optimize Design Based on Daylighting and Acoustics Simulations
- 1.7.3. Examples of Successful Implementations That Have Improved Sustainability and Comfort

1.8. Innovation in Simulation and Predictive Modeling
- 1.8.1. Exploration of Emerging Technologies and Their Impact on Simulation and Modeling
- 1.8.2. Discussion of How AI Is Changing Simulation Capabilities in Architecture
- 1.8.3. Evaluation of Future Tools and Their Potential Applications in Architectural Design

1.9. Simulation of Construction Processes with CityEngine
- 1.9.1. Applying CityEngine to Simulate Construction Sequences and Optimize On-Site Workflows
- 1.9.2. AI Integration for Modeling Construction Logistics and Coordinating Activities in Real-Time
- 1.9.3. Case Studies Showing Improved Construction Efficiency and Safety through Advanced Simulations

1.10. Challenges and Future of Simulation and Predictive Modeling
- 1.10.1. Assessment of Current Challenges in Simulation and Predictive Modeling in Architecture
- 1.10.2. Emerging Trends and the Future of These Technologies in Architectural Practice
- 1.10.3. Discussion on the Impact of Continued Innovation in Simulation and Predictive Modeling in Architecture and Construction

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"

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

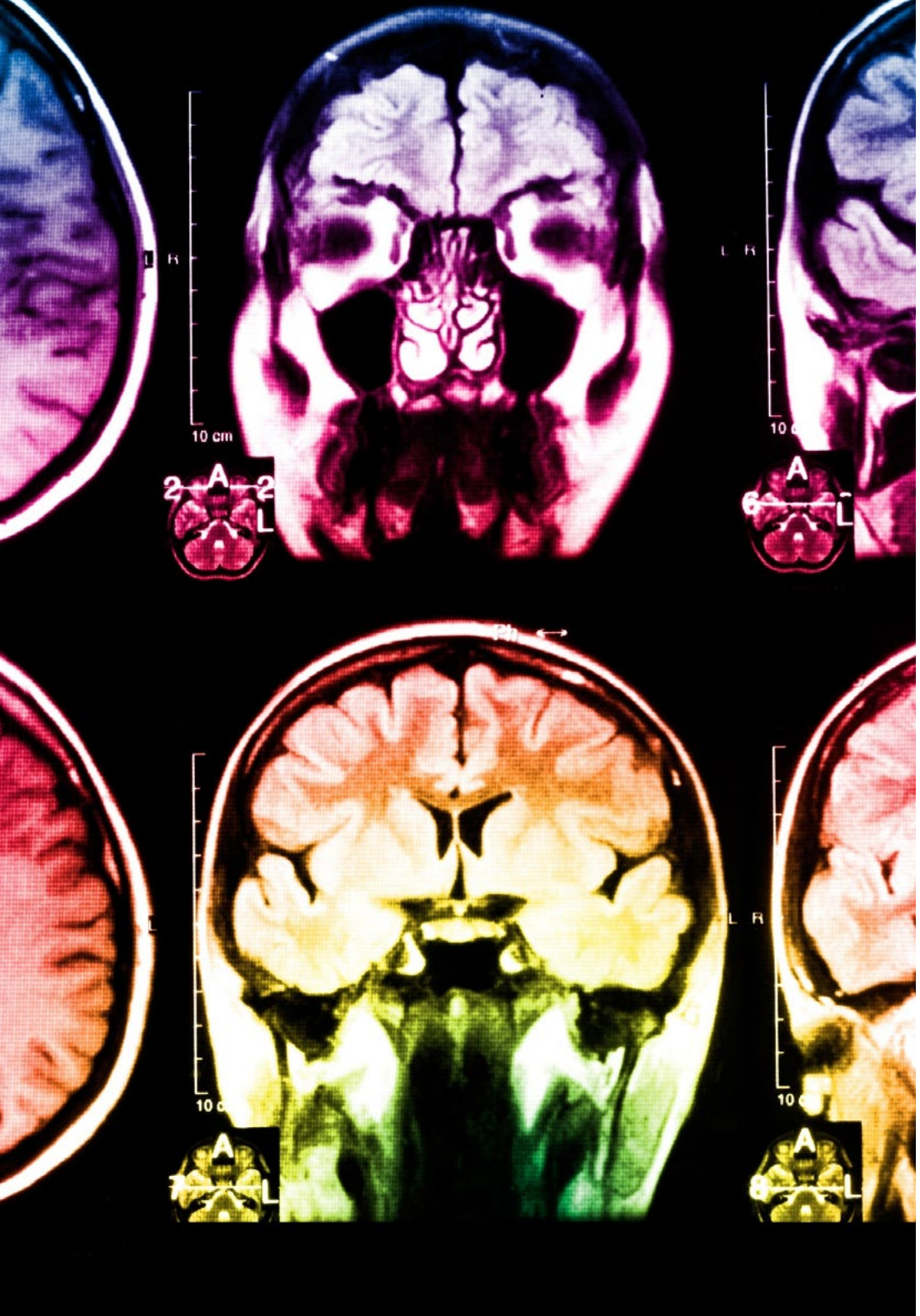
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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.

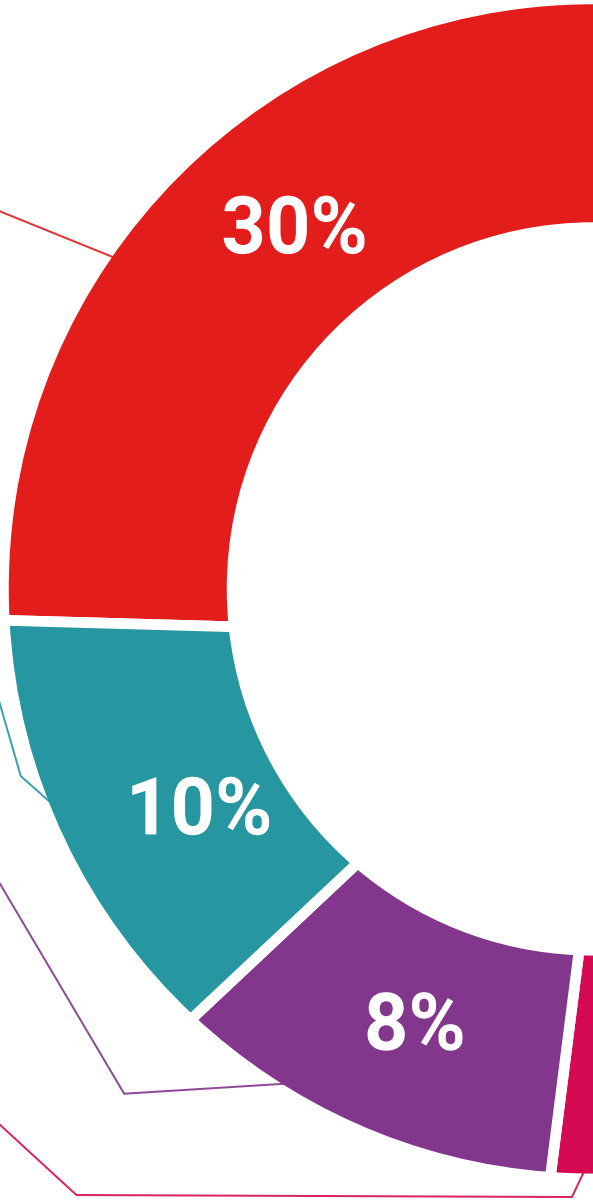
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

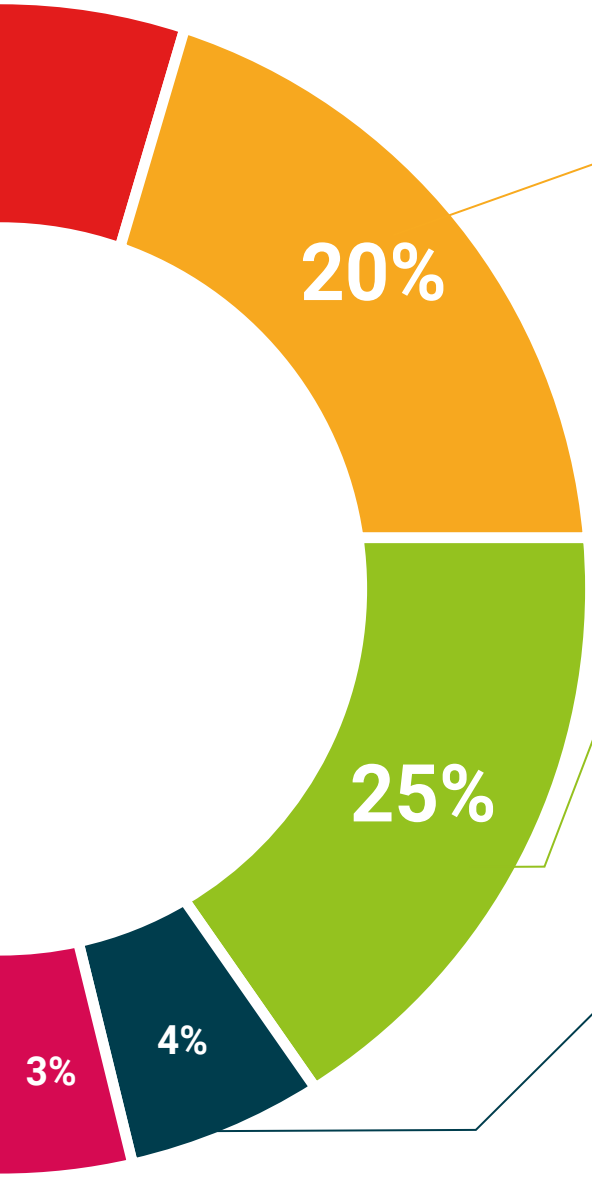
Practising Skills and Abilities

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.

06

Certificate

The Postgraduate Certificate in Simulation and Predictive Modeling with Artificial Intelligence guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate 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 **Postgraduate Certificate in Simulation and Predictive Modeling with Artificial Intelligence** 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 Simulation and Predictive Modeling with Artificial Intelligence**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**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Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Certificate in Simulation and Predictive Modeling with Artificial Intelligence

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.

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