

# Postgraduate Certificate

## Innovation in Design Processes and Artificial Intelligence



## Postgraduate Certificate Innovation in Design Processes and Artificial Intelligence

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

Website: [www.techtute.com/us/design/postgraduate-certificate/innovation-design-processes-artificial-intelligence](http://www.techtute.com/us/design/postgraduate-certificate/innovation-design-processes-artificial-intelligence)

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# 01

# Introduction

Materials and Design Performance Analysis using Artificial Intelligence (AI) is used to both evaluate and improve the performance of components in a variety of fields, including engineering. This system simulates the performance of components under real-world conditions prior to manufacturing. It can even predict how components will behave under different loads, temperatures or environments. In this way, designers will avoid failures and focus on design optimization. Despite these advantages, there are several challenges that professionals must overcome to make the most of this technology. For this reason, TECH has created a 100% online university training program that will provide the most effective Artificial Intelligence algorithms for materials analysis.



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*A complete and cutting-edge program that will allow you to advance in a progressive and complete way, from the comfort of your home”*

The combination of Innovation in Design Processes and Machine Learning offers numerous opportunities to improve efficiency, creativity and quality in various disciplines. For example, Artificial Intelligence automatically generates multiple design options based on specific parameters or objectives. This enables designers to explore a variety of ideas efficiently to discover highly creative solutions. In tune with this, these advanced tools analyze market data for emerging trends, opportunities and demands. Therefore, organizations carry out innovation processes while adapting to changing market conditions.

Given this reality, TECH implements a Postgraduate Certificate in Innovation in Design Processes and Artificial Intelligence. The curriculum will focus on the detailed analysis of how Machine Learning impacts and transforms Design processes, highlighting fundamental areas such as environmental impact simulation and Internet of Things (IoT) integration. The teaching materials will delve into the creation of virtual prototypes, using the most sophisticated tools of Cognitive Computing. Professionals will get a comprehensive view of how these technologies revolutionize the way designs are conceptualized, developed and executed.

In this way, TECH has devised a rigorous university program, supported by the innovative method of Relearning. This educational methodology is based on the repetition of fundamental concepts, guaranteeing a complete assimilation of the contents. In this way, students will have a progressive and natural learning process, without making the extra effort of memorizing. Accessibility will also be key, since only an electronic device with an Internet connection (such as a cell phone, computer or tablet) will be required to access the material, at any time and in any place, which will free students from the need to attend in person or comply with fixed schedules.

This **Postgraduate Certificate in Innovation in Design Process and Artificial Intelligence** contains the most complete and up-to-date program on the market. The most important features include:

- ♦ The development of case studies presented by experts in Design Process Innovation and AI
- ♦ The graphic, schematic and practical contents of the book provide technical and practical information on those 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



*You'll drive personalization and precise tailoring to consumers' specific needs to make their experiences more satisfying"*



“

*You will drive effective complex problem solving, bridging the gap between human creativity and the analytical power of Artificial Intelligence”*

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 and experienced experts.

*You will contribute to the evolution of products and services, generating a positive impact on end-user satisfaction.*

*You will benefit from a learning system based on repetition, with natural and progressive learning throughout the study plan.*

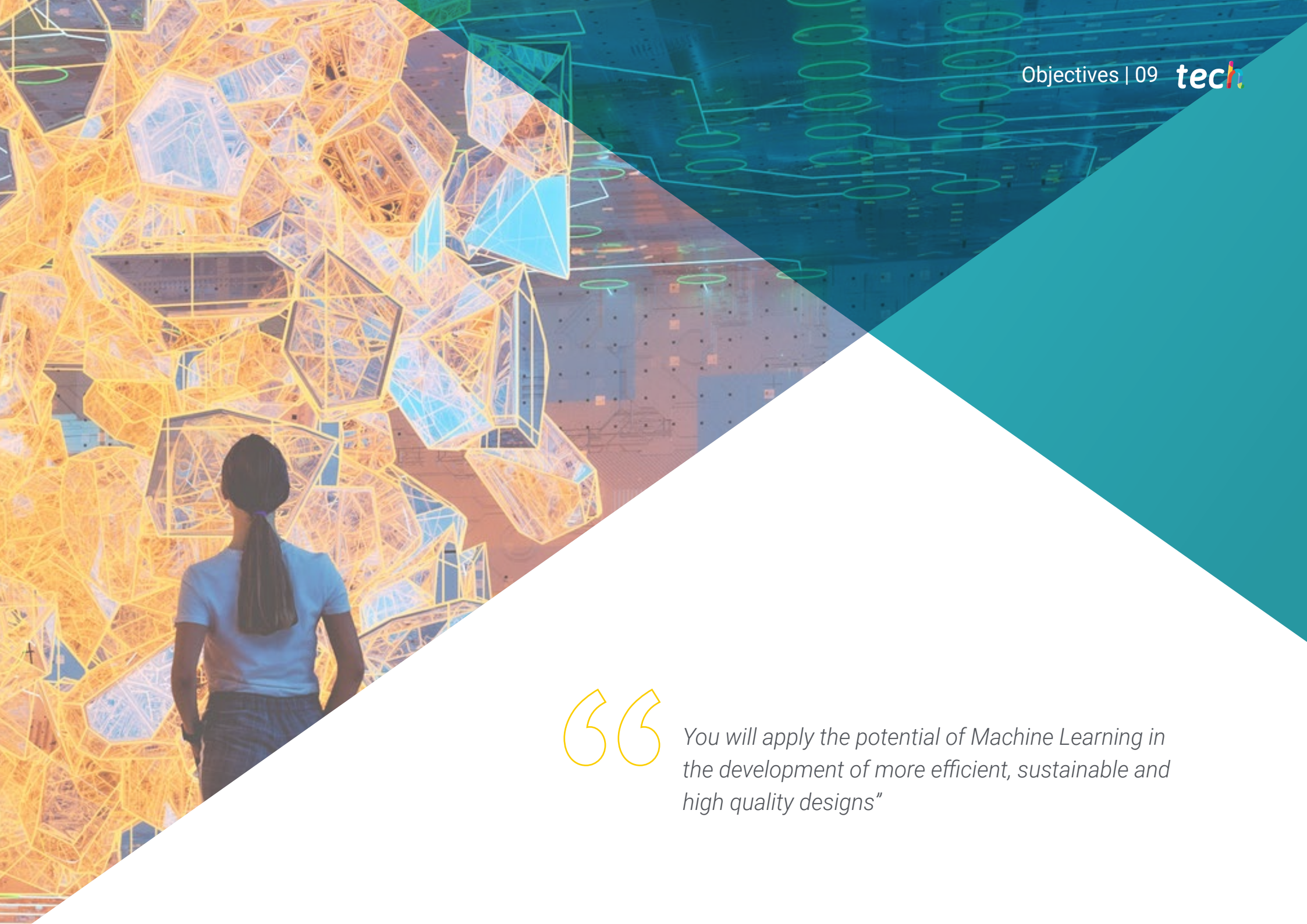


# 02 Objectives

This program will enable designers to become leaders of innovation by merging human creativity with the cutting-edge technology of Machine Learning. Upon completion of the Postgraduate Certificate, graduates will be nurtured with knowledge and skills to shape the future of Design. In this way, specialists will develop disruptive and sustainable proposals that will have a positive impact on today's world. In addition, they will have at their disposal a wide range of resources with which they will overcome the challenges that arise during the performance of their work.







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*You will apply the potential of Machine Learning in the development of more efficient, sustainable and high quality designs”*

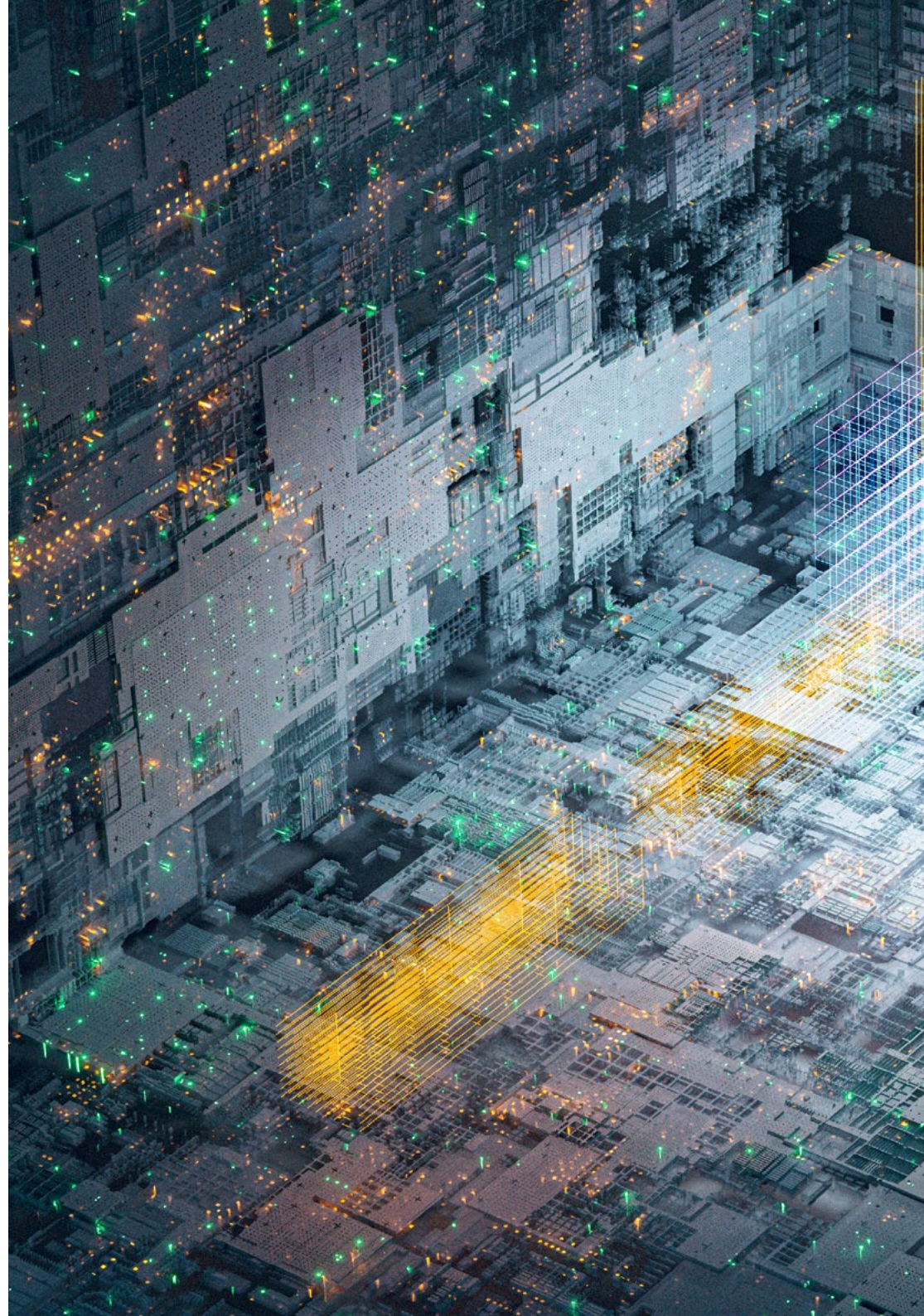




## General Objectives

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- ♦ Develop skills to implement Artificial Intelligence tools in design projects, covering automatic content generation, design optimization and pattern recognition
- ♦ Critically analyze the challenges and opportunities when implementing custom designs in industry using AI Artificial Intelligence
- ♦ Understand the transformative role of Artificial Intelligence in the innovation of design and manufacturing processes
- ♦ Encourage creativity and exploration during design processes, using AI as a tool to generate innovative solutions







## Specific Objectives

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- ◆ Understand the transformative role of AI in design and manufacturing process innovation
- ◆ Implement mass customization strategies in production using Artificial Intelligence, adapting products to individual needs
- ◆ Apply AI techniques to minimize waste in the design process, contributing to more sustainable practices
- ◆ Develop practical skills to apply AI techniques to improve industrial and design processes



*Access the multimedia resources library and the entire syllabus from day one. No fixed timetables, no attendance!"*



# 03

# Course Management

The teaching staff that makes up this university program are experts in the convergence between creativity and technology. In addition to having extensive work experience, these professionals have extensive experience in the practical application of Machine Learning in Design. This has allowed them to remain at the forefront of the advances that have been made in this field, applying them effectively to their usual procedures. Therefore, these experts will guide students through their learning process and encourage innovative thinking.







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*The diversity of talents and knowledge of the teaching staff will create a dynamic learning environment. Specialize with the best!"*

## Management



### Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometheus 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 the University of Castilla La Mancha
- Master in Executive MBA from Universidad Isabel I
- 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



### Mr. Maldonado Pardo, Chema

- ♦ Graphic Designer at DocPath Document Solutions S.L.
- ♦ Founding Partner and Head of the Design and Advertising Department at D.C.M. Difusión Integral de Ideas, C.B.
- ♦ Head of the Design and Digital Printing Department at Ofipaper, La Mancha S.L.
- ♦ Graphic Designer in Ático, Graphic Studio
- ♦ Graphic Designer and Craftsman Printer in Lozano Artes Gráficas
- ♦ Layout and Graphic Designer in Gráficas Lozano
- ♦ ETSI Telecommunications by the Polytechnic University of Madrid
- ♦ ETS Computer Systems ETSI by the University of Castilla-La Mancha

## Professors

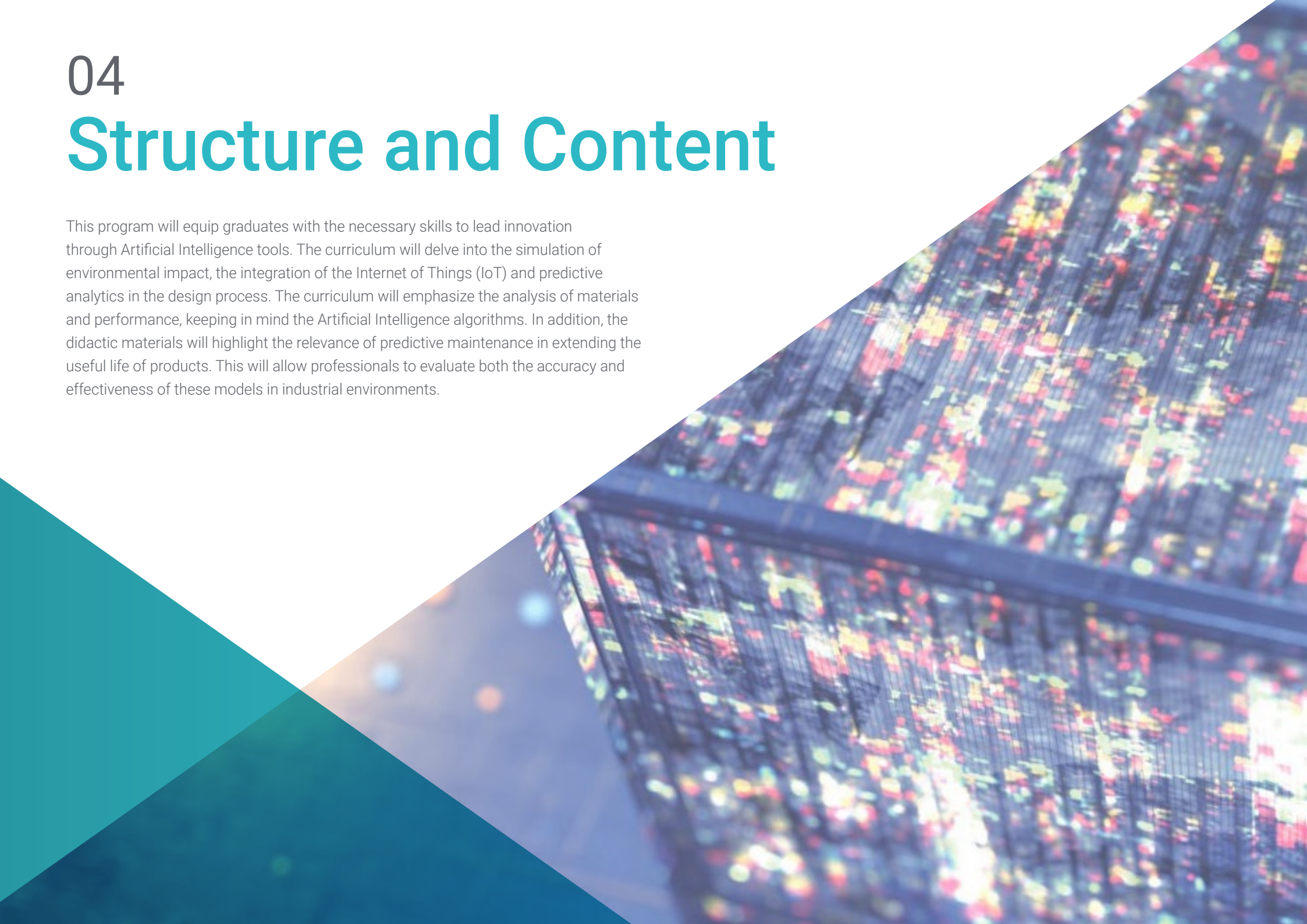
### Ms. Parreño Rodríguez, Adelaida

- ♦ *Technical Developer & Energy Communities Engineer at the University of Murcia*
- ♦ Technical Developer & Energy Communities Engineer at the University of Murcia
- ♦ Manager in Research & Innovation in European Projects at the University of Murcia
- ♦ Content Creator in Global UC3M Challenge
- ♦ Ginés Huertas Martínez Award (2023)
- ♦ Master's Degree in Renewable Energies by the Polytechnic University of Cartagena
- ♦ Degree in Electrical Engineering (bilingual) from the Carlos III University of Madrid

# 04

## Structure and Content

This program will equip graduates with the necessary skills to lead innovation through Artificial Intelligence tools. The curriculum will delve into the simulation of environmental impact, the integration of the Internet of Things (IoT) and predictive analytics in the design process. The curriculum will emphasize the analysis of materials and performance, keeping in mind the Artificial Intelligence algorithms. In addition, the didactic materials will highlight the relevance of predictive maintenance in extending the useful life of products. This will allow professionals to evaluate both the accuracy and effectiveness of these models in industrial environments.





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*A program that will challenge conventional boundaries and invite you to explore the unlimited potential of Artificial Intelligence in the field of Design”*

## Module 1. Innovation in Design and AI Processes

- 1.1. Optimization of Manufacturing Processes with AI Simulations
  - 1.1.1. Introduction to Manufacturing Process Optimization
  - 1.1.2. AI Simulations for Production Optimization
  - 1.1.3. Technical and Operational Challenges in the Implementation of AI Simulations
  - 1.1.4. Future Perspectives: Advances in Process Optimization with AI
- 1.2. Virtual Prototyping: Challenges and Benefits
  - 1.2.1. Importance of Virtual Prototyping in Design
  - 1.2.2. Tools and Technologies for Virtual Prototyping
  - 1.2.3. Challenges in Virtual Prototyping and Strategies for Overcoming Them
  - 1.2.4. Impact on Design Innovation and Agility
- 1.3. Generative Design: Applications in Industry and Artistic Creation
  - 1.3.1. Architecture and Urban Planning
  - 1.3.2. Fashion and Textile Design
  - 1.3.3. Design of Materials and Textures
  - 1.3.4. Automation in Graphic Design
- 1.4. Materials and Performance Analysis Using Artificial Intelligence
  - 1.4.1. Importance of Materials and Performance Analysis in Design
  - 1.4.2. Artificial Intelligence Algorithms for Material Analysis
  - 1.4.3. Impact on Design Efficiency and Sustainability
  - 1.4.4. Implementation Challenges and Future Applications
- 1.5. Mass Customization in Industrial Production
  - 1.5.1. Transformation of Production Through Mass Customization
  - 1.5.2. Enabling Technologies for Mass Customization
  - 1.5.3. Logistical and Scale Challenges of Mass Customization
  - 1.5.4. Economic Impact and Innovation Opportunities
- 1.6. Artificial Intelligence-Assisted Design Tools (Deep Dream Generator, Fotor and Snappa)
  - 1.6.1. Generation-Assisted Design Gan (Generative Adversarial Networks)
  - 1.6.2. Collective Generation of Ideas
  - 1.6.3. Context-aware Generation
  - 1.6.4. Exploration of Non-linear Creative Dimensions



- 1.7. Collaborative Human-robot Design in Innovative Projects
  - 1.7.1. Integration of Robots in Innovative Design Projects
  - 1.7.2. Tools and Platforms for Human-robot Collaboration (ROS, OpenAI Gym and Azure Robotics)
  - 1.7.3. Challenges in Integrating Robots in Creative Projects
  - 1.7.4. Future Perspectives in Collaborative Design with Emerging Technologies
- 1.8. Predictive Maintenance of Products: AI Approach
  - 1.8.1. Importance of Predictive Maintenance in Product Prolongation
  - 1.8.2. Machine Learning Models for Predictive Maintenance
  - 1.8.3. Practical Implementation in Various Industries
  - 1.8.4. Evaluation of the Accuracy and Effectiveness of these Models in Industrial Environments
- 1.9. Automatic Generation of Typefaces and Visual Styles
  - 1.9.1. Fundamentals of Automatic Generation in Typeface Design
  - 1.9.2. Practical Applications in Graphic Design and Visual Communication
  - 1.9.3. AI-assisted Collaborative Design in the Creation of Typefaces
  - 1.9.4. Exploration of Automatic Styles and Trends
- 1.10. IoT Integration for Real-time Product Monitoring
  - 1.10.1. Transformation with the Integration of IoT in Product Design
  - 1.10.2. Sensors and IoT Devices for Real Time Monitoring
  - 1.10.3. Data Analysis and IoT-based Decision Making
  - 1.10.4. Implementation Challenges and Future Applications of IoT in Design

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*Thanks to this 100% online training, you will deepen your knowledge of Human-Robot Collaborative Design and launch innovative projects”*



# 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.







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*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.

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*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.*



### *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.

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

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

The case method is the most widely used learning system in the best faculties in the world. 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 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 8 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.

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.

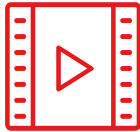
*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

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.



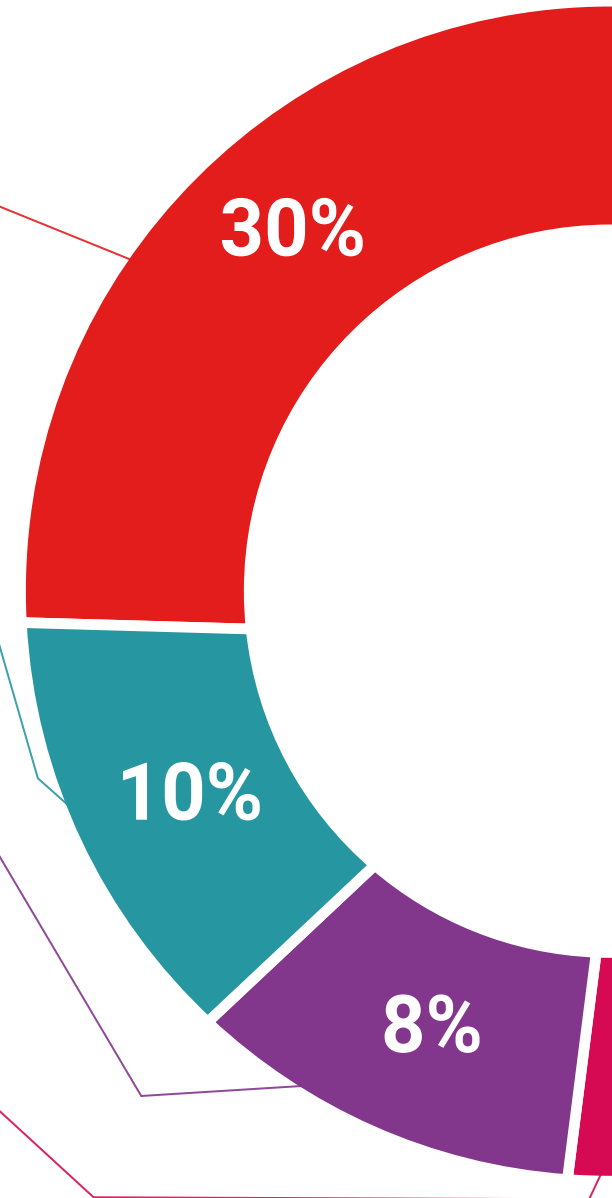
### Practising Skills and Abilities

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 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 Innovation in Design Processes and 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.



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*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 Innovation in Design Processes and 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 Innovation in Design Processes and Artificial Intelligence**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**







## Postgraduate Certificate Innovation in Design Processes and Artificial Intelligence

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

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