

# Postgraduate Certificate Space Optimization and Energy Efficiency with Artificial Intelligence



## Postgraduate Certificate Space Optimization and Energy Efficiency with 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/artificial-intelligence/postgraduate-certificate/space-optimization-energy-efficiency-artificial-intelligence](http://www.techtute.com/us/artificial-intelligence/postgraduate-certificate/space-optimization-energy-efficiency-artificial-intelligence)

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# 01

# Introduction

The quest for sustainability in architecture has led to an increased focus on Space Optimization and Energy Efficiency. In this sense, Artificial Intelligence has revolutionized this field by providing experts with different tools that allow them to analyze and simulate the behavior of buildings under different conditions. Faced with this reality, professionals need to handle this emerging tool in order to optimize the spatial distribution and efficient use of energy. For this reason, TECH presents an innovative university program focused on Space Optimization and Energy Efficiency with Artificial Intelligence. It should be noted that it is taught entirely in a flexible 100% online mode that adapts to the schedule of busy architects.



“

*Through this Postgraduate Certificate based on Relearning, you will use the tools of Artificial Intelligence to optimize energy consumption in buildings”*

A new study by the International Energy Agency shows that buildings are responsible for 36% of the world's CO2 emissions, which underlines the importance of improving architectural design. Faced with this situation, Artificial Intelligence has become a fundamental tool for Space Optimization and Energy Efficiency. Among its main advantages is that it can simulate the energy consumption of a building according to different variables such as orientation, type of materials and heating systems. In addition, intelligent systems can automatically adjust energy use according to environmental conditions, reducing consumption without sacrificing the comfort of individuals.

In this context, TECH is launching a pioneering program in Space Optimization and Energy Efficiency with Artificial Intelligence. The academic itinerary will comprehensively analyze the development of energy performance metrics through tools such as SketchUp and Trimble. Likewise, the syllabus will delve into bioclimatic design and solar orientation so that students can construct buildings that are not only energy efficient, but also sustainable and comfortable for their occupants. Along the same lines, the didactic materials will delve into the use of sustainable materials assisted by Artificial Intelligence with Cityzenit. In this way, graduates will be able to model the energy performance of buildings and use materials that improve Energy Efficiency in their procedures.

Moreover, the program is based on TECH's innovative Relearning system. This system promotes natural and progressive learning through the repetition of key concepts. Students will only need an electronic device with an Internet connection to access the virtual campus. On this platform, graduates will find a variety of multimedia resources such as case studies, detailed videos or personalized readings.

The **Postgraduate Certificate in Space Optimization and Energy Efficiency 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



*The interactive summaries of each topic will allow you to consolidate in a dynamic way the concepts on the implementation of WattPredictor to improve energy use in public spaces”*

“

*Do you want to perform energy performance analysis of buildings using simulation tools? With this university program you will achieve it in only 6 weeks”*

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.

*You will delve into Intelligent Energy Management with Google DeepMind's Energy.*

*Study from the comfort of your home and increase your knowledge online with TECH, the world's largest digital university.*



# 02

# Objectives

Through this Postgraduate Certificate, architects will handle sophisticated Artificial Intelligence techniques to optimize the energy performance of buildings. Similarly, graduates will acquire advanced skills to perform energy simulations of buildings using predictive models. In line with this, professionals will integrate sustainability principles into the architectural design process, evaluating the life cycle of materials and their environmental impact. In addition, students will establish metrics and track energy performance of buildings over time using data analysis tools.





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*You will apply advanced optimization techniques in the design of architectural spaces, ensuring their efficient and functional use”*



## General Objectives

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- ♦ 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

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- Implement bioclimatic design strategies and AI-assisted technologies to improve the energy efficiency of architectural initiatives
- Acquire skills in the use of simulation tools to improve energy efficiency in urban planning and architecture



*The university program includes real case studies and exercises to bring the development of the program closer to everyday architectural practice"*

03

# Course Management

TECH's priority is to offer the most comprehensive and renewed university programs in the academic panorama, which is why it makes a meticulous process to constitute its teaching staff. As a result of this effort, this Postgraduate Certificate has the collaboration of prestigious specialists in Space Optimization and Energy Efficiency with Artificial Intelligence. These professionals have developed a myriad of teaching materials that stand out for their high quality and for adapting to the demands of today's labor market. In this way, architects will gain access to an intensive experience that will improve their job prospects considerably.





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*An experienced teaching team made up of experts in Space Optimization and Energy Efficiency with Artificial Intelligence will guide you through the entire academic itinerary”*

## 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 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

### Mr. Peralta Vide, Javier

- ◆ Technological Coordinator and Content Developer at Aranzadi Laley Formación
- ◆ Collaborator at CanalCreativo
- ◆ Collaborator at Dentsu
- ◆ Collaborator at Ai2
- ◆ Collaborator at BoaMistura
- ◆ Freelance Architect at Editorial Nivola, Biogen Technologies, Releaf, etc.
- ◆ Specialization by Revit Architecture Metropa School
- ◆ Graduate in Architecture and Urbanism from the University of Alcalá

# 04

# Structure and Content

This university program is designed by prestigious experts in Space Optimization and Energy Efficiency with Artificial Intelligence. The curriculum will delve into the use of Autodesk Revit to perform energy simulations to evaluate the performance of a building in different conditions. At the same time, the syllabus will provide students with the most avant-garde strategies of bioclimatic design assisted by Artificial Intelligence to maximize energy efficiency. Also the didactic contents will analyze the use of sustainable materials supported by Artificial Intelligence analysis.







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*You will use simulation and modeling techniques to evaluate the energy performance of buildings, which will allow you to significantly optimize the quality of constructions”*

## Module 1. Space Optimization and Energy Efficiency with Artificial Intelligence

- 1.1. Optimizing Spaces with Autodesk Revit and AI
  - 1.1.1. Using Autodesk Revit and AI for Spatial Optimization and Energy Efficiency
  - 1.1.2. Advanced Techniques for Improving Energy Efficiency in Architectural Designs
  - 1.1.3. Case Studies of Successful Projects Combining Autodesk Revit with AI
- 1.2. Analysis of Energy Efficiency Metrics and Data with SketchUp and Trimble
  - 1.2.1. Applying SketchUp and Trimble Tools for Detailed Energy Analysis
  - 1.2.2. Developing Energy Efficiency Metrics Using AI
  - 1.2.3. Strategies for Setting Energy Efficiency Goals for Architectural Projects
- 1.3. Bioclimatic Design and AI-Optimized Solar Orientation
  - 1.3.1. AI-Assisted Bioclimatic Design Strategies for Maximizing Energy Efficiency
  - 1.3.2. Examples of Buildings Using AI-Guided Design to Optimize Thermal Comfort
  - 1.3.3. Practical Applications of AI in Solar Orientation and Passive Design
- 1.4. AI-Assisted Sustainable Materials and Technologies with Cityzenit
  - 1.4.1. Innovation in Sustainable Materials Supported by AI Analysis
  - 1.4.2. Using AI to Develop and Apply Recycled and Low-Environmental-Impact Materials
  - 1.4.3. Study of Projects Using Renewable Energy Systems Integrated with AI
- 1.5. Urban Planning and Energy Efficiency with WattPredictor and AI
  - 1.5.1. AI Strategies for Energy Efficiency in Urban Design
  - 1.5.2. Implementing WattPredictor to Optimize Energy Use in Public Spaces
  - 1.5.3. Successful Cases of Cities Using AI to Improve Urban Sustainability
- 1.6. Intelligent Energy Management with Google DeepMind's Energy
  - 1.6.1. Applications of DeepMind Technologies for Energy Management
  - 1.6.2. Implementing AI for Energy Consumption Optimization
  - 1.6.3. Assessment of Cases Where AI Has Transformed Energy Management in Communities and Buildings





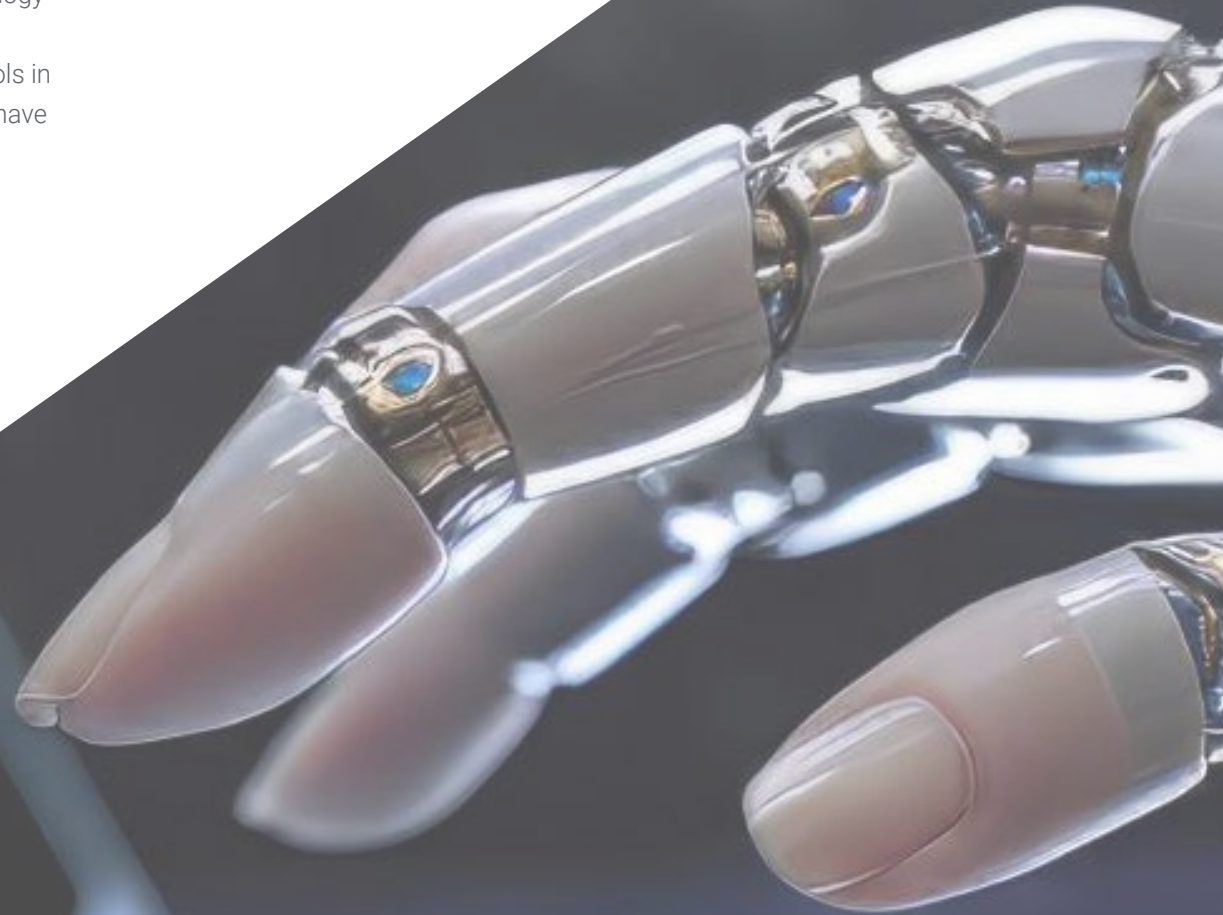
- 1.7. AI-Assisted Energy Efficiency Certifications and Regulations
  - 1.7.1. Using AI to Ensure Compliance with Energy Efficiency Standards (LEED, BREEAM)
  - 1.7.2. AI Tools for Energy Audit and Certification of Projects
  - 1.7.3. Impact of Regulations on AI-Supported Sustainable Architecture
- 1.8. Life Cycle Assessment and Environmental Footprint with Enernoc
  - 1.8.1. AI Integration for Life Cycle Analysis of Building Materials
  - 1.8.2. Using Enernoc to Assess Carbon Footprint and Sustainability
  - 1.8.3. Model Projects Using AI for Advanced Environmental Assessments
- 1.9. Energy Efficiency Education and Awareness with Verdigris
  - 1.9.1. Role of AI in Energy Efficiency Education and Awareness
  - 1.9.2. Using Verdigris to Teach Sustainable Practices to Architects and Designers
  - 1.9.3. Initiatives and Educational Programs Using AI to Promote a Cultural Change Toward Sustainability
- 1.10. Future of Space Optimization and Energy Efficiency with ENBALA
  - 1.10.1. Exploration of Future Challenges and the Evolution of Energy Efficiency Technologies
  - 1.10.2. Emerging Trends in AI for Spatial and Energy Optimization
  - 1.10.3. Perspectives on How AI Will Continue to Transform Architecture and Urban Design

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.*



*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.





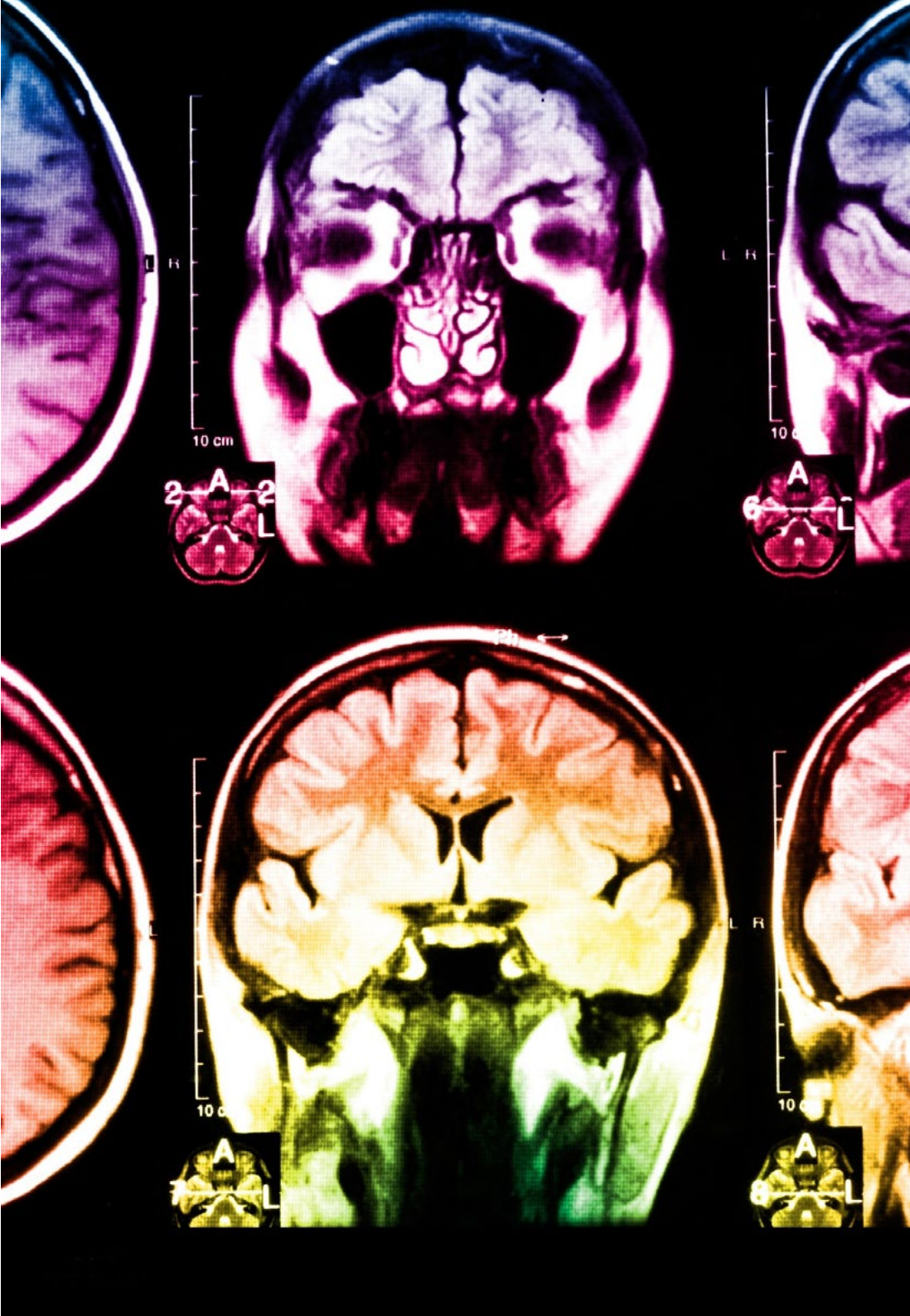
In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

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.



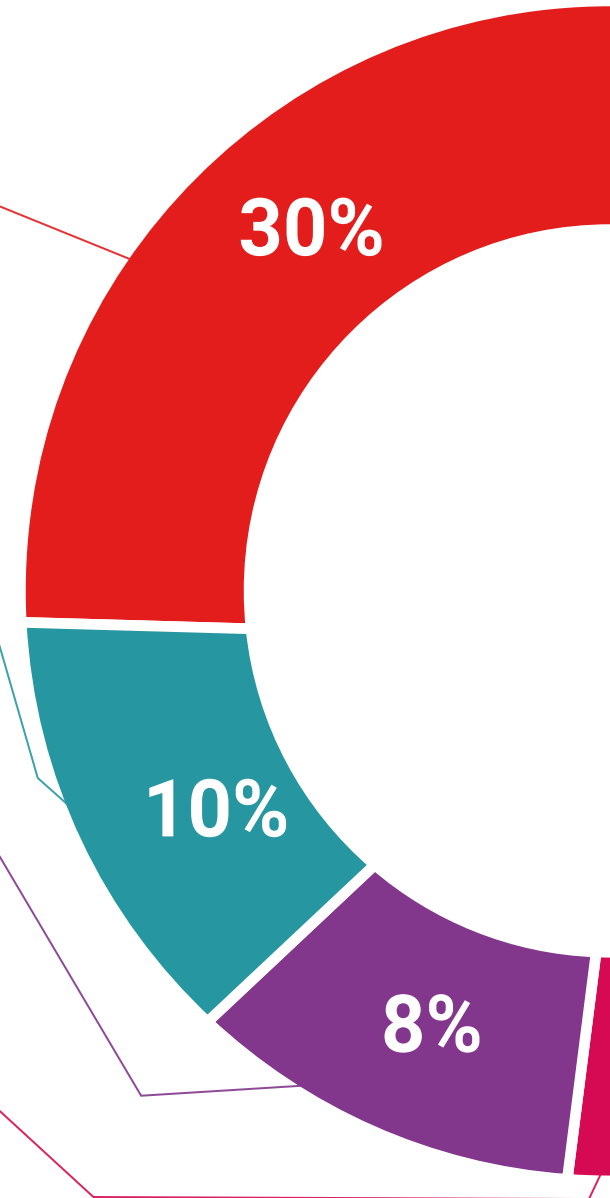
### Practising Skills and Abilities

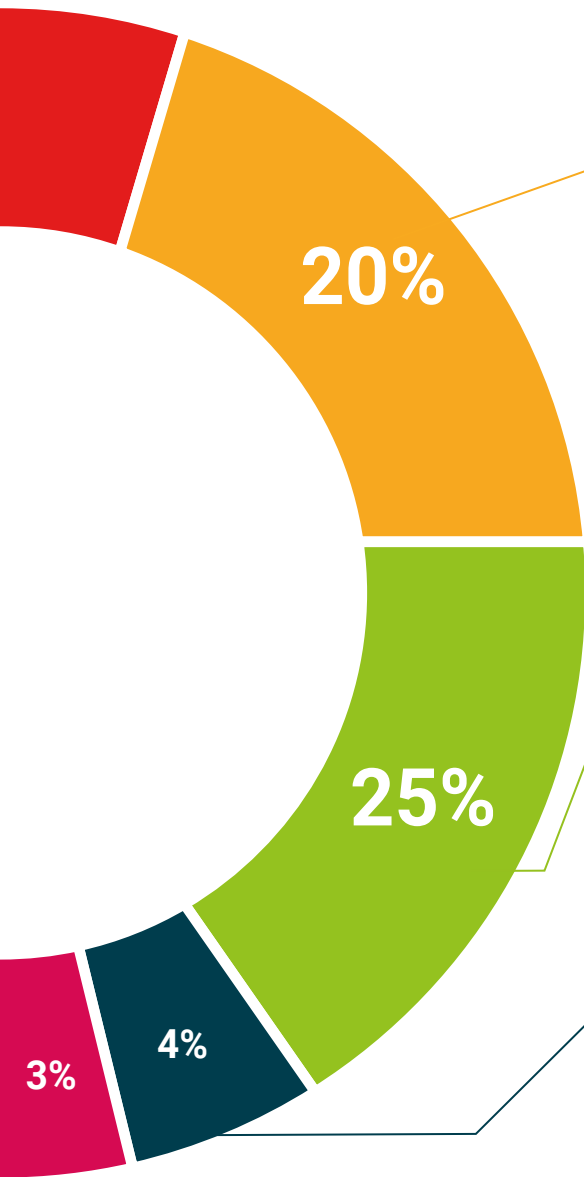
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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 Space Optimization and Energy Efficiency 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 Space Optimization and Energy Efficiency 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.

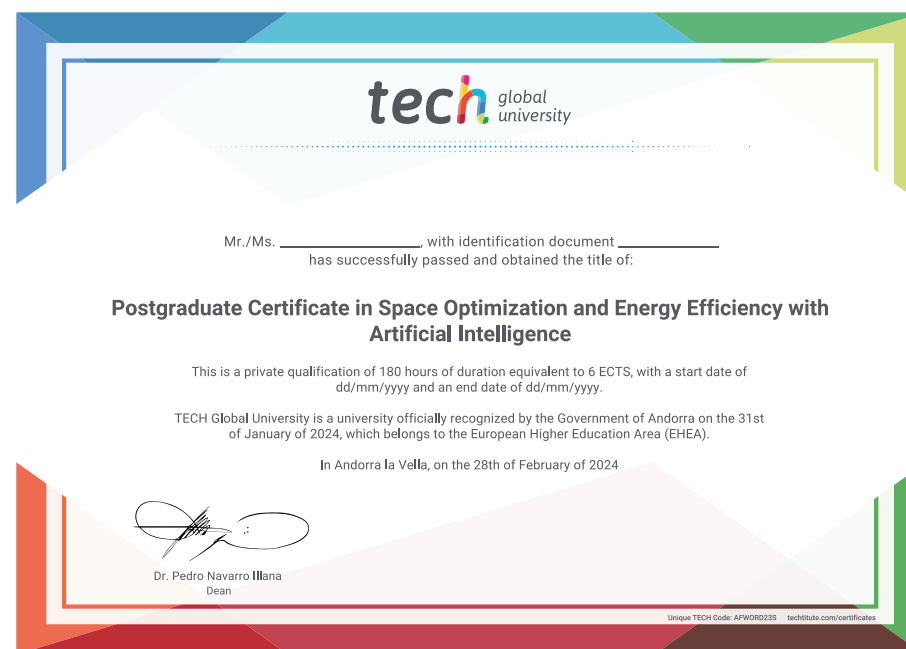
This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Space Optimization and Energy Efficiency with Artificial Intelligence**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





## Postgraduate Certificate

Space Optimization and Energy  
Efficiency with Artificial Intelligence

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

# Postgraduate Certificate

Space Optimization and Energy Efficiency  
with Artificial Intelligence