

Postgraduate Certificate Heritage Preservation and Restoration with Artificial Intelligence



Postgraduate Certificate Heritage Preservation and Restoration 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/engineering/postgraduate-certificate/heritage-preservation-restoration-artificial-intelligence

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Course Management

p. 12

04

Structure and Content

p. 16

05

Methodology

p. 20

06

Certificate

p. 28

01

Introduction

Heritage Preservation and Restoration have been profoundly transformed by the introduction of Artificial Intelligence, which has revolutionized analysis methods and intervention techniques. In fact, advanced AI tools allow a detailed and accurate examination of works of art, historical monuments and other cultural elements, facilitating the detection of deterioration that would otherwise go unnoticed. Therefore, through the use of machine learning algorithms and pattern recognition, existing damage can be identified and future deterioration can be predicted. In this context, TECH offers a complete program 100% online and flexible, allowing professionals to organize their schedules in a personalized way. In addition, it is based on the innovative Relearning methodology, a pioneer in this institution.



“

Discover how the management of Heritage Preservation and Restoration has a close relationship with Artificial Intelligence, which facilitates its planning. All thanks to this 100% online Postgraduate Certificate!”

The integration of Artificial Intelligence in heritage preservation and restoration has opened new opportunities for engineers. Using advanced algorithms, AI makes it possible to accurately analyze materials and structures, identifying patterns of deterioration and optimizing restoration processes. In turn, the ability to predict future damage and automate complex tasks has transformed the traditional approach, offering more efficient and less invasive solutions.

This is how this Postgraduate Certificate was created, which will focus on the use of Artificial Intelligence technologies applied to photogrammetry for heritage restoration. In this sense, innovative methods will be addressed to accurately document and restore historic buildings, ensuring a balance between modern techniques and respect for the authenticity of the structures. In addition, outstanding projects that have employed these tools to efficiently preserve cultural heritage will be reviewed.

In addition, laser scanning-assisted predictive analysis, a technology that can detect and prevent deterioration in historic structures, will be discussed in depth. Here, AI will play a key role in the evaluation and conservation of these elements, improving the accuracy and efficiency of interventions. Case studies will also demonstrate how the integration of AI and laser scanning has revolutionized preventive conservation.

The program will also address the management of cultural heritage through AI-assisted virtual reconstructions. Strategies for creating digital versions of historic structures and monuments will be discussed, which not only facilitate their long-term preservation, but also improve their accessibility for education and dissemination.

Therefore, this 100% online program will provide graduates with an update of their knowledge, placing them at the forefront of the latest innovations in Artificial Intelligence applied to Architecture. Similarly, another factor that positions TECH as one of the best institutions is its revolutionary Relearning methodology, consisting of the reiteration of key concepts for an optimal and organic assimilation of the contents.

The **Postgraduate Certificate in Heritage Preservation and Restoration with 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 Artificial Intelligence applied to Architecture
- ♦ 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 the self-assessment process can be carried out 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 be immersed in a comprehensive and up-to-date curriculum, characterized by delving into AI technologies that have improved the accuracy and effectiveness of conservation and restoration”

“

You will master AI-based monitoring systems for the early detection of structural problems, all thanks to this Postgraduate Certificate that implements the revolutionary Relearning learning methodology”

The program's teaching staff includes professionals from the industry who contribute their work experience to this 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.

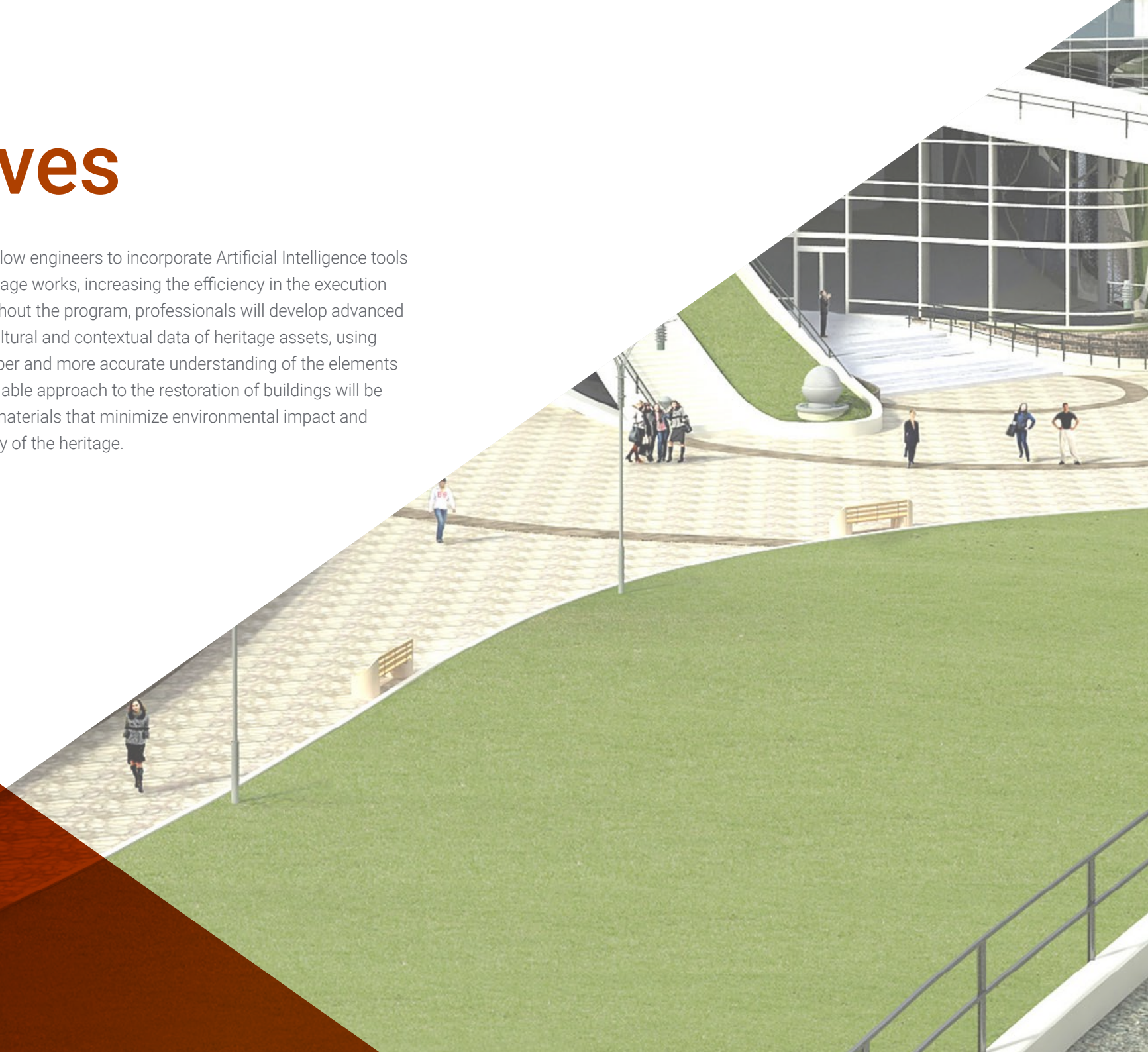
Heritage protection is a major concern for the architectural sector. Join this program and complement your knowledge to join the use of new AI technologies!

You will specialize in the use of BIM models for the efficient management of heritage, as well as its preservation and restoration, standing out in the field of Architecture thanks to an extensive library of multimedia resources.

02

Objectives

This Postgraduate Certificate will allow engineers to incorporate Artificial Intelligence tools in the restoration processes of heritage works, increasing the efficiency in the execution of these projects. Therefore, throughout the program, professionals will develop advanced skills in the analysis of historical, cultural and contextual data of heritage assets, using digital technologies to obtain a deeper and more accurate understanding of the elements to be restored. In addition, a sustainable approach to the restoration of buildings will be encouraged, promoting the use of materials that minimize environmental impact and respect the authenticity and integrity of the heritage.





“

Get updated on the main strategies for the management and digital preservation of heritage with IA, through the best teaching materials in the academic market, at the forefront of technology and education”



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

- Master the use of photogrammetry and laser scanning for both documentation and conservation of architectural heritage
- Develop skills to manage cultural heritage preservation projects, considering the ethical implications and responsible use of AI



You will identify the appropriate tools to efficiently manage the conservation of cultural heritage, through Geographic Information Systems and the Virtual Reconstruction tool"

03

Course Management

The teaching team of this TECH program has been chosen for their vast experience in the sector and their recognized prestige, both academically and professionally. In fact, they are experts who have dedicated their careers to the protection of cultural heritage and the implementation of Artificial Intelligence algorithms to optimize digital restoration processes. So, they will share their valuable experience and deep knowledge in a crucial discipline for engineers. In addition, they have developed a high-level curriculum, guaranteeing advanced and specialized preparation.





“

These experts will bring in-depth knowledge and expertise in their respective areas, ensuring you high quality training that reflects both their experience and their renown within the industry”

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'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

Ms. Martínez Cerrato, Yésica

- ♦ Responsible for Technical Training at Securitas Seguridad España
- ♦ Education, Business and Marketing Specialist
- ♦ Product Manager B C in Electronic Security at Securitas Seguridad España
- ♦ Business Intelligence Analyst at Ricopia Technologies
- ♦ Computer Technician and Responsible for OTEC computer classrooms at the University of Alcalá de Henares
- ♦ Collaborator in the ASALUMA Association
- ♦ Degree in Electronic Communications Engineering at the Polytechnic School, University of Alcalá de Henares

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 TECH program offers an agenda that will cover important aspects related to the implementation of laser scanning and predictive analysis in the conservation of cultural heritage. In this way, through practical examples, it will demonstrate how these technologies have improved accuracy and efficiency in conservation processes. In addition, the engineer will be able to manage their own pace of study, covering all the essential concepts of Artificial Intelligence. In this sense, this program will provide high-level training, designed to offer a highly valued specialization in the field of heritage preservation.





“

Take advantage of this academic itinerary, which will train you in the best advanced digital documentation techniques, thanks to the extensive library of innovative multimedia resources that TECH offers you”

Module 1. Heritage Preservation and Restoration with Artificial Intelligence

- 1.1. AI Technologies in Heritage Restoration with Photogrammetry
 - 1.1.1. Using Photogrammetry and AI for Accurate Heritage Documentation and Restoration
 - 1.1.2. Practical Applications in the Restoration of Historic Buildings
 - 1.1.3. Outstanding Projects Combining Advanced Techniques and Respect for Authenticity
- 1.2. Predictive Analysis for Conservation with Laser Scanning
 - 1.2.1. Implementing Laser Scanning and Predictive Analytics in Heritage Conservation
 - 1.2.2. Using AI to Detect and Prevent Deterioration in Historic Structures
 - 1.2.3. Examples of How These Technologies Have Improved Accuracy and Efficiency in Conservation
- 1.3. Cultural Heritage Management with Virtual Reconstruction
 - 1.3.1. Applying AI-Assisted Virtual Reconstruction Techniques
 - 1.3.2. Strategies for Digital Heritage Management and Preservation
 - 1.3.3. Success Stories in the Use of Virtual Re-Enactment for Education and Preservation
- 1.4. Preventive Conservation and AI-Assisted Maintenance
 - 1.4.1. Using AI Technologies to Develop Strategies for Preventive Conservation and Maintenance of Historic Buildings
 - 1.4.2. Implementing AI-Based Monitoring Systems for Early Detection of Structural Problems
 - 1.4.3. Examples of How AI Contributes to the Long-Term Conservation of Cultural Heritage
- 1.5. Digital Documentation and BIM in Heritage Preservation
 - 1.5.1. Applying Advanced Digital Documentation Techniques, including BIM and Augmented Reality, Assisted by AI
 - 1.5.2. Using BIM Models for Efficient Heritage Management and Restoration
 - 1.5.3. Case Studies on the Integration of Digital Documentation in Restoration Projects





- 1.6. AI-Assisted Preservation Policies and Management
 - 1.6.1. Using AI-Based Tools for Management and Policy Making in Heritage Preservation
 - 1.6.2. Strategies for Integrating AI into Conservation-Related Decision-Making
 - 1.6.3. Discussion of How AI Can Improve Collaboration Among Institutions for Heritage Preservation
- 1.7. Ethics and Responsibility in AI Restoration and Preservation
 - 1.7.1. Ethical Considerations in the Application of AI in Heritage Restoration
 - 1.7.2. Debate on the Balance between Technological Innovation and Respect for Historical Authenticity
 - 1.7.3. Examples of How AI Can Be Used Responsibly in Heritage Restoration
- 1.8. Innovation and the Future of Heritage Preservation with AI
 - 1.8.1. Perspectives on Emerging AI Technologies and Their Application in Heritage Preservation
 - 1.8.2. Assessing the Potential of AI to Transform Restoration and Conservation
 - 1.8.3. Discussion on the Future of Heritage Preservation in an Era of Rapid Technological Innovation
- 1.9. Cultural Heritage Education and Awareness with GIS
 - 1.9.1. Importance of Public Education and Awareness in Cultural Heritage Preservation with GIS
 - 1.9.2. Using Geographical Information Systems (GIS) to Promote the Valuation and Knowledge of Cultural Heritage
 - 1.9.3. Successful Education and Outreach Initiatives Using Technology to Teach about Cultural Heritage
- 1.10. Challenges and the Future of Heritage Preservation and Restoration
 - 1.10.1. Identification of Current Challenges in Cultural Heritage Preservation
 - 1.10.2. Role of Technological Innovation and AI in Future Conservation and Restoration Practices
 - 1.10.3. Perspectives on How Technology Will Transform Heritage Preservation in the Coming Decades

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.



contains the most complete and up-to-date program on the market. The most important features include:

“

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 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 that you are presented with 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.

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 Heritage Preservation and Restoration 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 Heritage Preservation and Restoration 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 Heritage Preservation and Restoration with Artificial Intelligence**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





Postgraduate Certificate Heritage Preservation and Restoration with Artificial Intelligence

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

Postgraduate Certificate Heritage Preservation and Restoration with Artificial Intelligence

