Postgraduate Certificate
Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis

tech global university

Postgraduate Certificate
Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis

» 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/advanced-applications-artificial-intelligence-medical-imaging-studies-analysis

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01
Introduction

The incorporation of Artificial Intelligence in Imaging is transforming the way physicians approach the diagnosis and treatment of various pathologies. For example, Deep Learning allows images to be analyzed with a level of precision and speed. These tools not only facilitate the early detection of diseases, but also contribute to personalized treatment planning. In view of this, specialists need to handle the most cutting-edge techniques to analyze Medical Images and optimize the quality of their diagnostic accuracy. In order to support them in this task, TECH presents an exclusive university program focused on Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis. It is also taught in a convenient online format.

Thanks to this 100% online Postgraduate Certificate, you will apply the most innovative Medical Image processing techniques for early detection of a variety of pathologies such as Lung Cancer"

According to a new study by the World Health Organization, the use of Artificial Intelligence in the interpretation of Medical Images can reduce diagnostic errors in complex pathologies by 30%, among which Cancer and Neurological Diseases stand out. In view of this, the organization urges physicians to develop algorithms that facilitate the early detection of diseases, the monitoring of treatments and the personalization of clinical interventions.

In this context, TECH is developing a pioneering Postgraduate Certificate in Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis. The academic itinerary will delve into subjects ranging from the design of user interfaces for the integrated visualization of multidisciplinary data or early warning systems in the detection of anomalies to the most sophisticated visualization tools for therapeutic planning. In line with this, the syllabus will analyze how the Data Mining technique can be used to identify relevant biomarkers such as changes in lung density to identify diseases such as Pulmonary Fibrosis. In this way, graduates will develop advanced competencies to handle emerging tools such as Deep Learning to optimize the processing of Medical Images.

On the other hand, the university program is based on the Relearning method, of which TECH is a pioneer, and which guarantees the exhaustive assimilation of complex concepts. In this regard, it should be noted that the only thing required by doctors to access this Virtual Campus is a device with Internet access (such as cell phones, tablets or computers). In this way, graduates will have at their disposal a variety of multimedia resources such as explanatory videos, case studies and interactive summaries.

This **Postgraduate Certificate in Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis** 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 eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable for professional practice
- Practical exercises where self-assessment can be used to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

You will learn useful lessons from real cases in simulated learning environments"

"You will delve into how Augmented Reality can be used in image-guided surgical procedures to facilitate the precise localization of delicate structures such as nerves or arteries"

Looking to master the most innovative imaging biomarker clinical validation techniques for diagnostic use? Get it through this university program in only 6 weeks.

With TECH's disruptive Relearning system you will reduce the long hours of study and memorization. You will progressively update your knowledge!

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.

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Objectives

Through this intensive Postgraduate Certificate, doctors will master the most sophisticated image processing techniques using Artificial Intelligence algorithms. In this same line, graduates will obtain advanced competences to specialize personalized models of Convolutional Neural Networks for the analysis of Medical Images. In this way, specialists will identify patterns in Medical Images to detect early pathologies such as Cancer, Cardiovascular Diseases or Neurological Disorders. In addition, professionals will use algorithms to analyze large volumes of images and improve consistency in the interpretation of results.

"You will integrate Artificial Intelligence solutions into the clinical environment, optimizing the diagnostic workflow and facilitating data-driven medical decision making"

General Objectives

- Understand the theoretical foundations of Artificial Intelligence

- Study the different types of data and understand the data life cycle

- 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

- Develop skills to use and apply advanced Artificial Intelligence tools in the interpretation and analysis of medical images, improving diagnostic accuracy

- Implement Artificial Intelligence solutions that allow the automation of processes and the personalization of diagnostics

- Apply Data Mining and Predictive Analytics techniques to make evidence-based clinical decisions

- Acquire research skills that allow experts to contribute to the advancement of Artificial Intelligence in medical imaging

Specific Objectives

• Execute observational studies in imaging using Artificial Intelligence, validating and calibrating the models efficiently

• Integrate medical imaging data with other biomedical sources, using tools such as Enlitic Curie to conduct multidisciplinary research

"
The interactive summaries of each topic will allow you to consolidate in a more dynamic way the concepts on the clinical validation of imaging biomarkers for diagnostic use"

Course Management

TECH's main premise is to make available to anyone the most comprehensive and renewed programs of the academic panorama, so it rigorously selects its teaching staff. As a result of this effort, the present Postgraduate Certificate counts with the collaboration of renowned experts in Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis, who have developed teaching materials characterized by their high quality and by adjusting to the requirements of the current labor market. Therefore, graduates have the guarantees they demand to enter into an experience that would allow them to significantly optimize their daily practice.
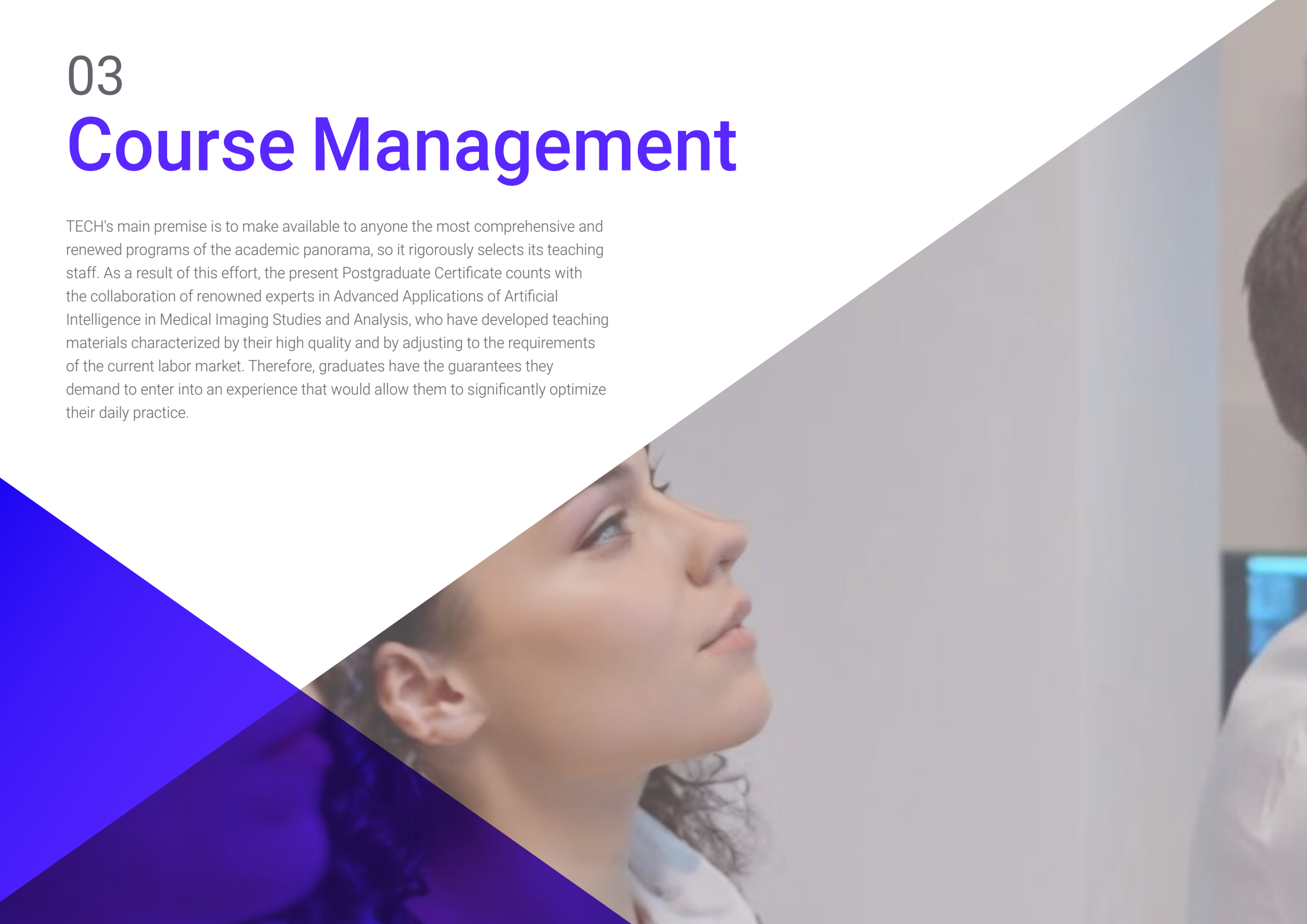
An experienced teaching staff specialized in Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis will guide you through the entire academic itinerary"

Management

Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO at Korporate Technologies
- CTO at AI Shephers 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
- Máster in Executive MBA por la 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

Professors

Mr. Popescu Radu, Daniel Vasile

- Independent Specialist in Pharmacology, Nutrition and Dietetics
- Freelance Producer of Teaching and Scientific Content
- Nutritionist and Community Dietitian
- Community Pharmacist
- Researcher
- Master's Degree in Nutrition and Health at the Open University of Catalonia
- Master's Degree in Psychopharmacology from the University of Valencia
- Pharmacist from the Complutense University of Madrid
- Nutritionist-Dietitian by the European University Miguel de Cervantes

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Structure and Content

The didactic materials that make up this university program have been developed by recognized experts in Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis. The study plan will delve into issues such as methods of integrating image data with other biomedical sources or development of Neural Network architectures for specific images to early warning systems in the detection of anomalies. Likewise, the syllabus will delve into the most innovative simulation techniques for surgery planning, which will allow professionals to visualize the individual anatomy of patients in order to anticipate complications.
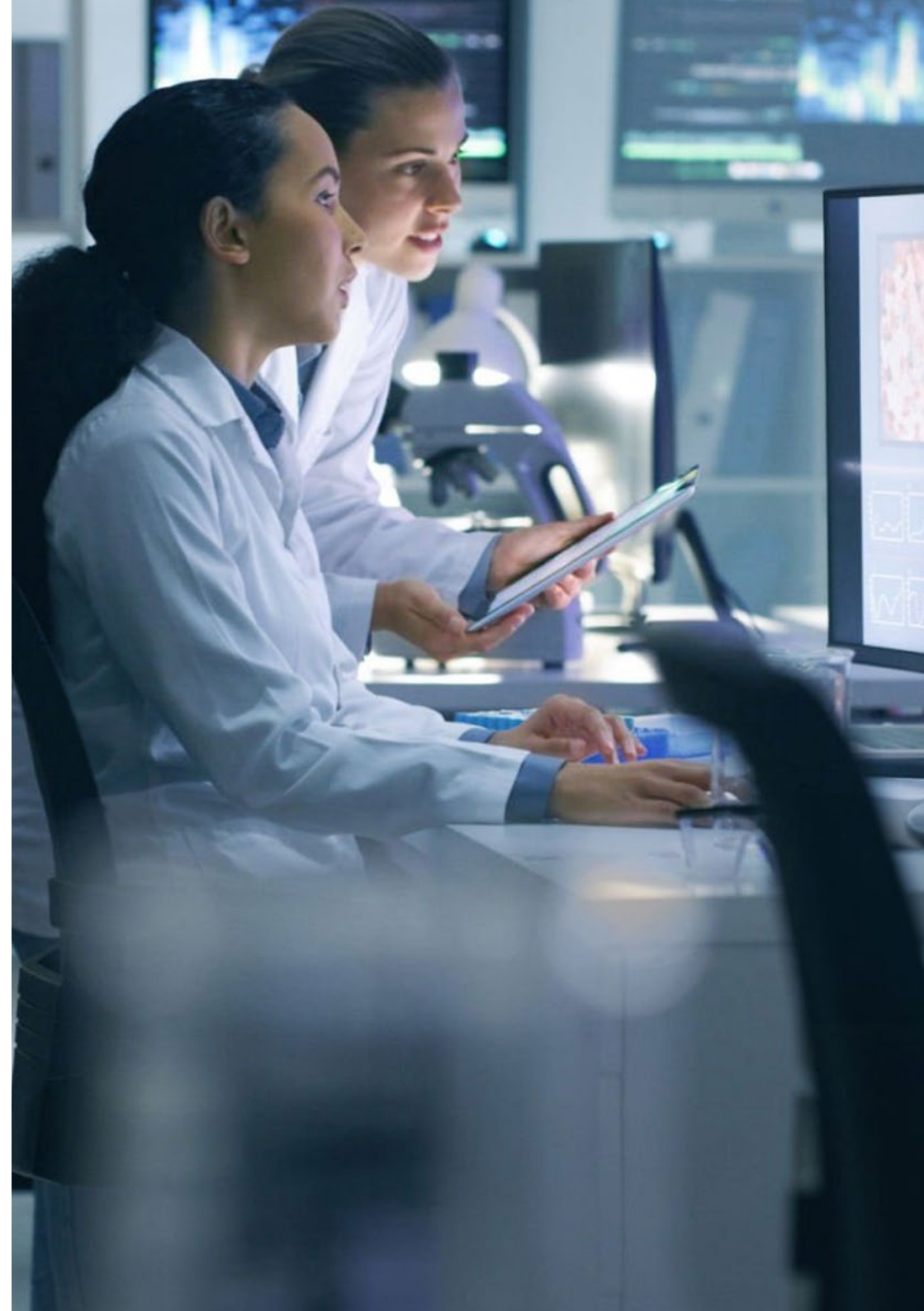
You will implement Artificial Intelligence models to identify pathologies in different Medical Imaging modalities such as Magnetic Resonance Imaging, Computed Tomography or Ultrasound"

Module 1. Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis

1.1.   Design and Execution of Observational Studies using Artificial Intelligence in Medical Imaging with Flatiron Health
   1.1.1.   Criteria for the Selection of Populations in Artificial Intelligence Observational Studies
   1.1.2.   Methods for Controlling Confounding Variables in Imaging Studies
   1.1.3.   Strategies for Long-Term Follow-Up in Observational Studies
   1.1.4.   Analysis of Results and Validation of Artificial Intelligence Models in Real Clinical Settings
1.2.   Validation and Calibration of AI Models in Image Interpretation with Arterys Cardio AI
   1.2.1.   Cross-Validation Techniques Applied to Diagnostic Imaging Models
   1.2.2.   Methods for Probability Calibration in AI Predictions
   1.2.3.   Performance Standards and Accuracy Metrics for AI Evaluation
   1.2.4.   Implementation of Robustness Testing in Different Populations and Conditions
1.3.   Methods of Integrating Imaging Data with other Biomedical Sources
   1.3.1.   Data Fusion Techniques to Improve Image Interpretation
   1.3.2.   Joint Analysis of Images and Genomic Data for Accurate Diagnoses
   1.3.3.   Integration of Clinical and Laboratory Information in Artificial Intelligence Systems
   1.3.4.   Development of User Interfaces for Integrated Visualization of Multidisciplinary Data
1.4.   Use of Medical Imaging Data in Multidisciplinary Research with Enlitic Curie
   1.4.1.   Interdisciplinary Collaboration for Advanced Image Analysis
   1.4.2.   Application of Artificial Intelligence Techniques from other Fields in Diagnostic Imaging
   1.4.3.   Challenges and Solutions in the Management of Large and Heterogeneous Data
   1.4.4.   Case Studies of Successful Multidisciplinary Applications
1.5.   Specific Deep Learning Algorithms for Medical Imaging with Aidoc
   1.5.1.   Development of Image-Specific Neural Network Architectures
   1.5.2.   Optimization of Hyperparameters for Medical Imaging Models
   1.5.3.   Transfer of Learning and its Applicability in Radiology

With the most highly valued study methods in online teaching, this Postgraduate Certificate will allow you to make unstoppable progress in your professional growth as a Doctor. What are you waiting for to enroll?"

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.
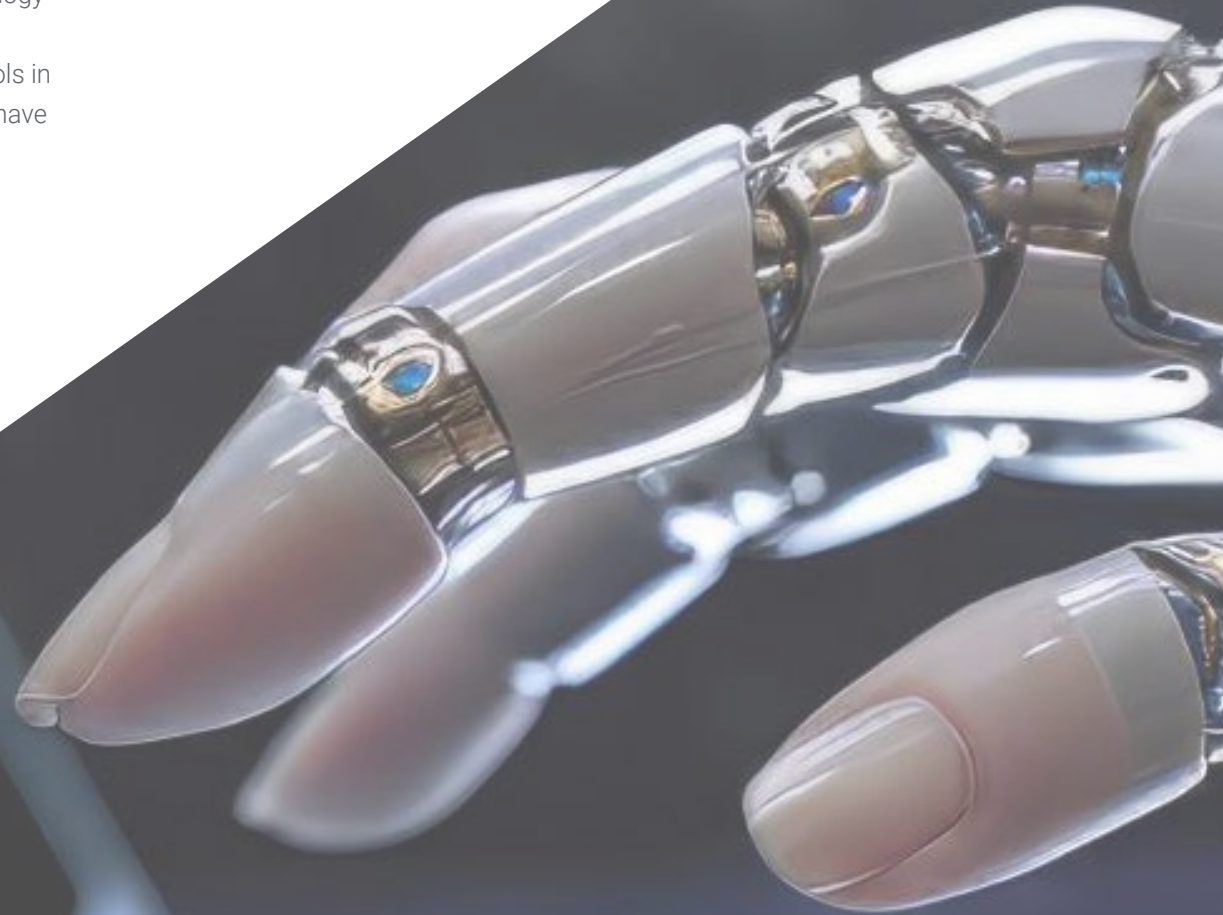
Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

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.

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.

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

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.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

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.

30%

10%

8%

20%

25%

3%

4%
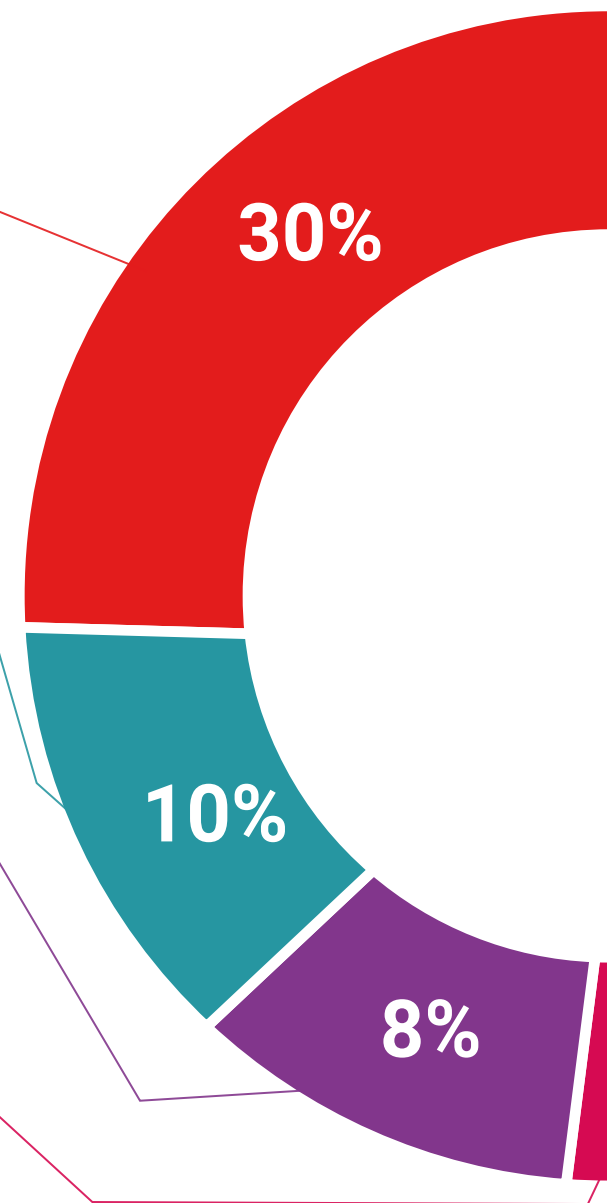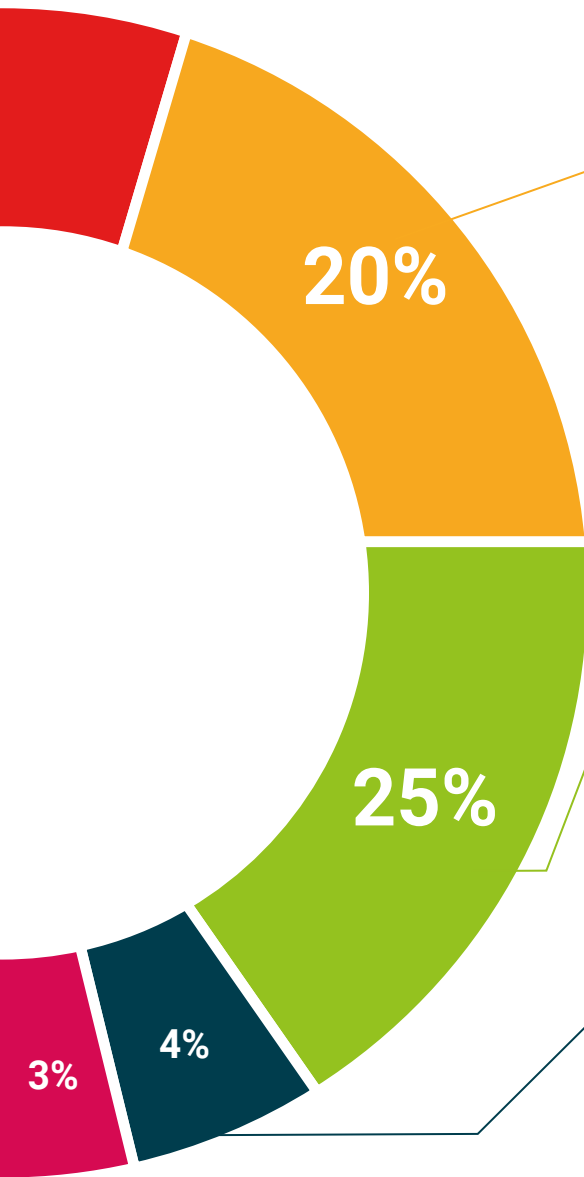
Case Studies

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.

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Certificate

The Postgraduate Certificate in Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis guarantees, 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 Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis** 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.
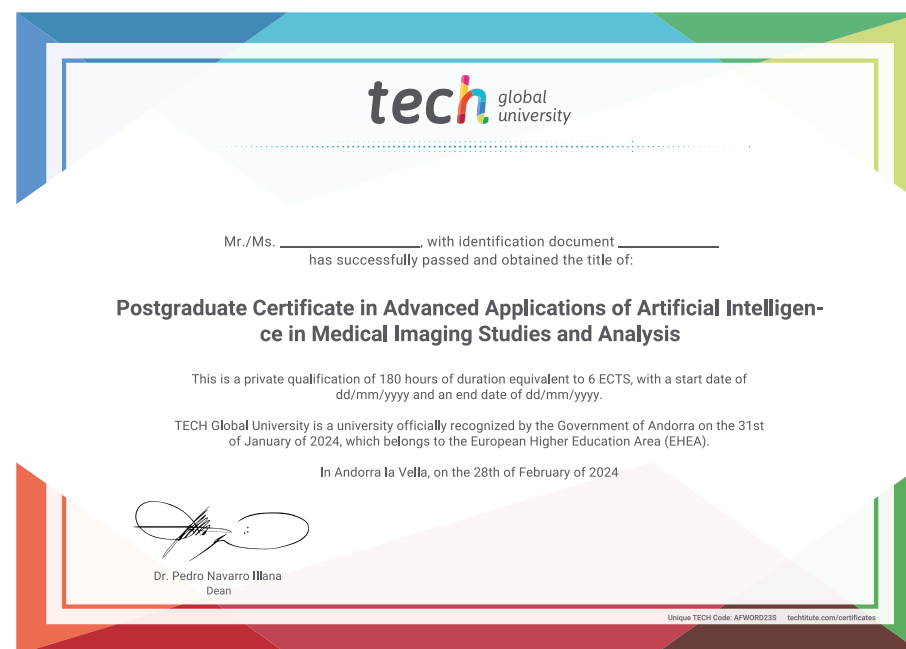
This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**

tech global university

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

Postgraduate Certificate in Advanced Applications of Artificial Intelligence in Medical Imaging Studies and Analysis

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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