

# Postgraduate Certificate

## Personalization and Automation in Medical Diagnostics using Artificial Intelligence





## Postgraduate Certificate Personalization and Automation in Medical Diagnostics using 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/personalization-automation-medical-diagnostics-using-artificial-intelligence](http://www.techtute.com/us/artificial-intelligence/postgraduate-certificate/personalization-automation-medical-diagnostics-using-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

The implementation of Artificial Intelligence in Medical Diagnostics is revolutionizing the way diseases are addressed, offering personalized and automated solutions that improve efficiency in healthcare. By integrating clinical, genomic and imaging data algorithms can identify complex patterns and develop predictive models that offer unprecedented personalization in medicine. In the face of this, specialists need to keep abreast of the latest innovations in the use of Artificial Intelligence to automate clinical analysis. With this idea in mind, TECH presents a pioneering university program focused on Personalization and Automation in Medical Diagnostics using Artificial Intelligence. In addition, it is taught in a convenient 100% online format.



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*Through this Postgraduate Certificate based on Relearning, you will implement Automation solutions in the clinical workflow to optimize the accuracy of Medical Diagnostics”*

The World Health Organization explains, in a recent report, that the integration of Artificial Intelligence in Medical Diagnosis can reduce diagnostic errors in complex pathologies by up to 30%, improving accuracy and speed in healthcare. In addition, advanced algorithms analyze large volumes of clinical data and medical images to provide personalized diagnoses and treatment recommendations tailored to the individual characteristics of each patient. In this context, specialists must incorporate these emerging technologies into their practice to detect a wide range of diseases at an early stage and therefore optimize users' prognoses.

To facilitate this task, TECH has designed an avant-garde program in Personalization and Automation in Medical Diagnostics using Artificial Intelligence. Conceived by experts in this field, the academic itinerary will delve into the most recent innovations in image processing and analysis techniques at the cellular level. At the same time, the syllabus will analyze the use of tools such as predictive models for efficient management of large volumes of image data. In this sense, the didactic materials will provide experts with the most effective strategies to ensure the quality and integrity of data in multicenter studies. In this way, graduates will acquire advanced competencies to develop predictive models that identify disease risks and recommend personalized treatments based on historical and clinical patient data.

The methodology of the university program is based on TECH's disruptive Relearning method, which guarantees the exhaustive assimilation of complex concepts. It is worth noting that the only thing doctors need to access this Virtual Campus is a device with Internet access, where they will find a variety of multimedia resources (such as explanatory videos, specialized readings or interactive summaries). Undoubtedly, this is a highly intensive experience that will help graduates optimize their daily clinical practice considerably.

This **Postgraduate Certificate in Personalization and Automation in Medical Diagnostics using 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 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 have all the support of TECH, the largest online academic institution in the world with the latest educational technology at your disposal"*

“

*Are you looking to use automation tools to prioritize critical cases and manage clinical alerts in real time? Achieve it through this university program”*

The program's teaching staff includes professionals from the sector who contribute their work experience to this specializing 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 delve into the most recent advances in the personalization of immunological treatments through the use of Artificial Intelligence.*

*TECH's 100% online methodology will allow you to update your knowledge without interrupting your professional work.*



# 02

# Objectives

Thanks to this Postgraduate Certificate, physicians will have a comprehensive knowledge on the application of Artificial Intelligence for Personalization and Automation in Medical Diagnosis to improve the accuracy of health care. At the same time, graduates will develop advanced skills to apply Machine Learning algorithms to analyze large volumes of medical data; including images, electronic health records and genomic data. In this sense, professionals will specialize predictive models that identify disease risks and recommend personalized treatments based on historical and clinical patient data.







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*You will apply predictive analytics techniques to anticipate the evolution of Chronic Diseases and adjust treatments proactively”*



## General Objectives

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- ◆ 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

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- Acquire skills to personalize diagnoses using Artificial Intelligence, correlating imaging findings with genomic and other biomarker data
- Master automation in medical image acquisition and processing, applying advanced Artificial Intelligence technologies



*You will be able to access the Virtual Campus at any time and download the contents to consult them whenever you want"*

# 03

# Course Management

TECH's philosophy is based on offering the most complete and updated university programs in the academic panorama, which is why it rigorously selects its different teaching staff. For the delivery of this Postgraduate Certificate, TECH has enlisted the services of renowned specialists in Personalization and Automation in Medical Diagnostics using Artificial Intelligence. In this way, they have developed a myriad of didactic contents that stand out for their excellent quality and for adapting to the demands of the current labor market. Therefore, graduates will enjoy an immersive experience that will allow them to significantly improve their career prospects.





“

*Leading experts in Personalization and Automation in Medical Diagnostics using Artificial Intelligence have joined forces in this program to show you all their knowledge in this field”*

## Management



### **Dr. Peralta Martín-Palomino, Arturo**

- ♦ CEO and CTO at Prometheus 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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*Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice”*

04

# Structure and Content

This university program has the design of authentic references in Personalization and Automation in Medical Diagnostics using Artificial Intelligence. The study plan will delve into issues such as the development of algorithms for the automatic analysis of sequences or predictive models to correlate genetic variants with pathologies visible in images to Deep Learning algorithms specialized in the detection of submicroscopic patterns. In line with this, the study plan will provide graduates with the most sophisticated strategies for the integration of clinical and image data in therapeutic planning.





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*You will use Artificial Intelligence models that integrate clinical, genomic and lifestyle data to develop personalized treatments that optimize health outcomes for each patient”*

## Module 1. Personalization and Automation in Medical Diagnostics using Artificial Intelligence

- 1.1. Application of Artificial Intelligence in Genomic Sequencing and Correlation with Imaging Findings using Fabric Genomics
  - 1.1.2. Artificial Intelligence Techniques for the Integration of Genomic and Imaging Data
  - 1.1.3. Predictive Models to Correlate Genetic Variants with Pathologies Visible in Images
  - 1.1.4. Development of Algorithms for the Automatic Analysis of Sequences and their Representation in Images
  - 1.1.5. Case Studies on the Clinical Impact of Genomics-Imaging Fusion
- 1.2. Advances in Artificial Intelligence for the Detailed Analysis of Biomedical Images with PathAI
  - 1.2.1. Innovations in Image Processing and Analysis Techniques at the Cellular Level
  - 1.2.2. Application of Artificial Intelligence for Resolution Enhancement in Microscopy Images
  - 1.2.3. Deep Learning Algorithms Specialized in the Detection of Submicroscopic Patterns
  - 1.2.4. Impact of Advances in Artificial Intelligence on Biomedical Research and Clinical Diagnosis
- 1.3. Automation in Medical Image Acquisition and Processing with Butterfly Network
  - 1.3.1. Automated Systems for the Optimization of Image Acquisition Parameters
  - 1.3.2. Artificial Intelligence in the Management and Maintenance of Imaging Equipment
  - 1.3.3. Algorithms for Real-Time Processing of Images during Medical Procedures
  - 1.3.4. Successful Cases in the Implementation of Automated Systems in Hospitals and Clinics
- 1.4. Personalization of Diagnoses using Artificial Intelligence and Precision Medicine with Tempus AI
  - 1.4.1. Artificial Intelligence Models for Personalized Diagnostics Based on Genetic and Imaging Profiles
  - 1.4.2. Strategies for the Integration of Clinical and Imaging Data in Therapeutic Planning
  - 1.4.3. Impact of Precision Medicine on Clinical Outcomes Via AI
  - 1.4.4. Ethical and Practical Challenges in Implementing Personalized Medicine



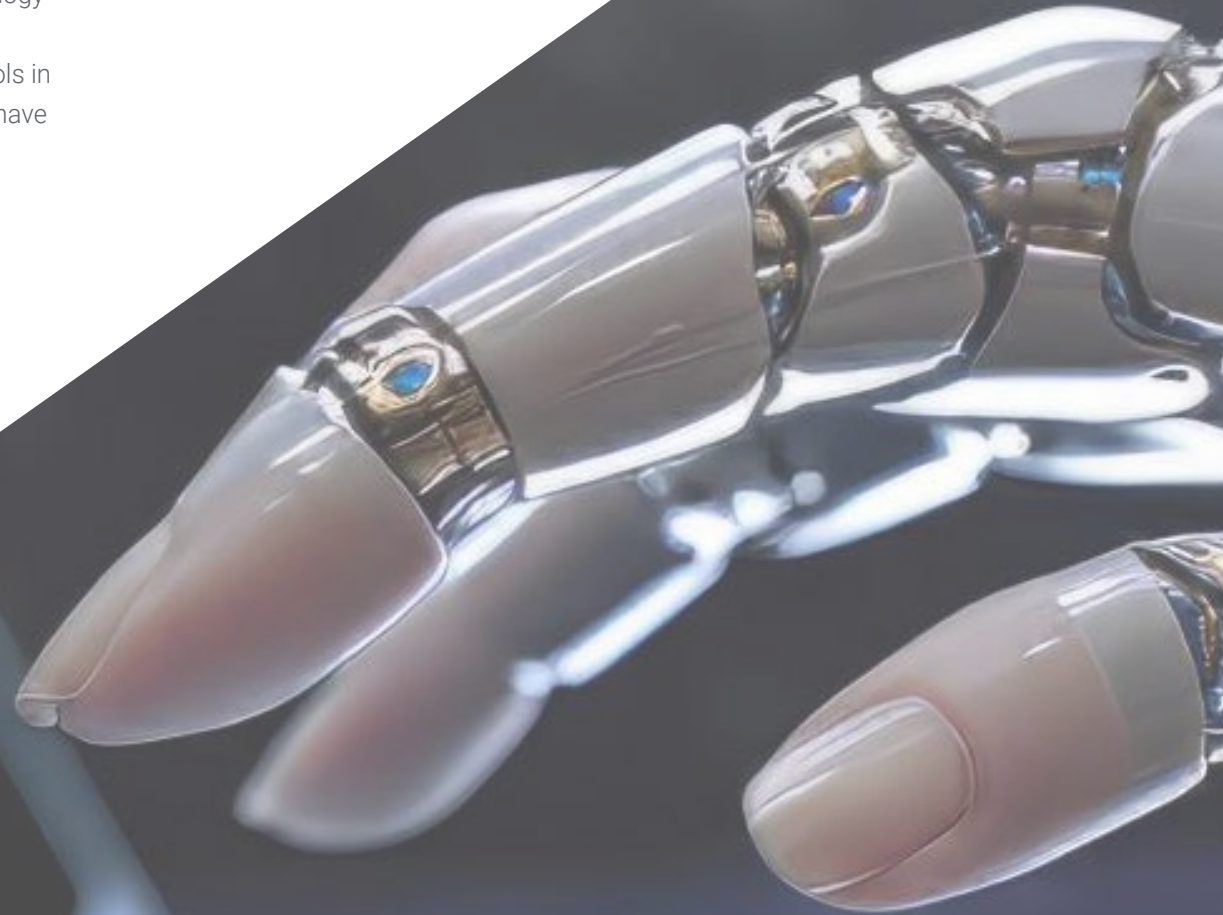
- 1.5. Innovations in AI-Assisted Diagnostics with Caption Health
  - 1.5.1. Development of New Artificial Intelligence Tools for the Early Detection of Diseases
  - 1.5.2. Advances in Artificial Intelligence Algorithms for the Interpretation of Complex Pathologies
  - 1.5.3. Integration of AI-Assisted Diagnostics in Routine Clinical Practice
  - 1.5.4. Evaluation of the Effectiveness and Acceptance of Diagnostic Artificial Intelligence by Healthcare Professionals
- 1.6. Applications of Artificial Intelligence in Microbiome Image Analysis with DayTwo AI
  - 1.6.1. Artificial Intelligence Techniques for Image Analysis in Microbiome Studies
  - 1.6.2. Correlation of Microbiome Imaging Data with Health Indicators
  - 1.6.3. Impact of Microbiome Findings on Therapeutic Decisions
  - 1.6.4. Challenges in the Standardization and Validation of Microbiome Imaging
- 1.7. Use of Wearables to Improve the Interpretation of Diagnostic Images with AliveCor
  - 1.7.1. Integration of Wearable Data with Medical Images for Complete Diagnostics
  - 1.7.2. AI Algorithms for the Analysis of Continuous Data and its Representation in Images
  - 1.7.3. Technological Innovations in Wearable Devices for Health Monitoring
  - 1.7.4. Case Studies on Improving Quality of Life Through Wearables and Imaging Diagnostics
- 1.8. Management of Diagnostic Imaging Data in Clinical Trials using Artificial Intelligence
  - 1.8.1. AI Tools for the Efficient Management of Large Volumes of Image Data
  - 1.8.2. Strategies to Ensure the Quality and Integrity of Data in Multicenter Studies
  - 1.8.3. Artificial Intelligence Applications for Predictive Analytics in Clinical Trials
  - 1.8.4. Challenges and Opportunities in the Standardization of Imaging Protocols in Global Trials
- 1.9. Development of Treatments and Vaccines Assisted by Advanced AI Diagnostics
  - 1.9.1. Use of Artificial Intelligence to Design Personalized Treatments Based on Imaging and Clinical Data
  - 1.9.2. Artificial Intelligence Models in the Accelerated Development of Vaccines Supported by Diagnostic Imaging
  - 1.9.3. Evaluation of the Effectiveness of Treatments by Means of Image Monitoring
  - 1.9.4. Impact of Artificial Intelligence in the Reduction of Time and Costs in the Development of New Therapies
- 1.10. AI Applications in Immunology and Immune Response Studies with ImmunoMind
  - 1.10.1. AI Models for the Interpretation of Images Related to the Immune Response
  - 1.10.2. Integration of Imaging Data and Immunological Analysis for Accurate Diagnosis
  - 1.10.3. Development of Imaging Biomarkers for Autoimmune Diseases
  - 1.10.4. Advances in the Personalization of Immunological Treatments through the Use of Artificial Intelligence

05

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: Relearning.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the New England Journal of Medicine have considered it to be one of the most effective.





“

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

## Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

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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.



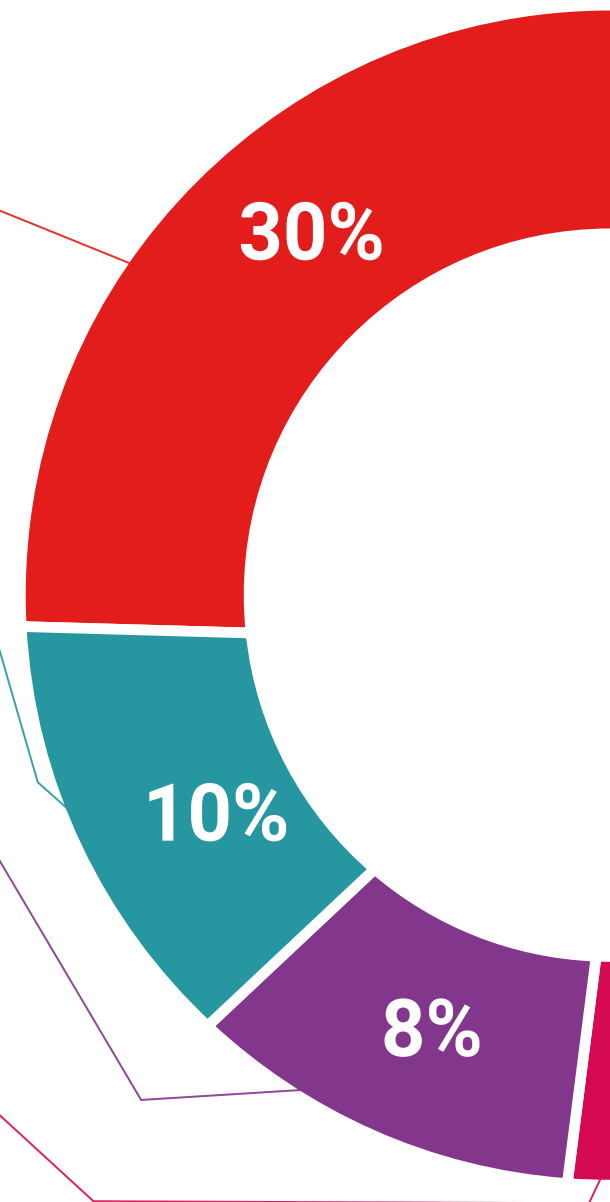
### Practising Skills and Abilities

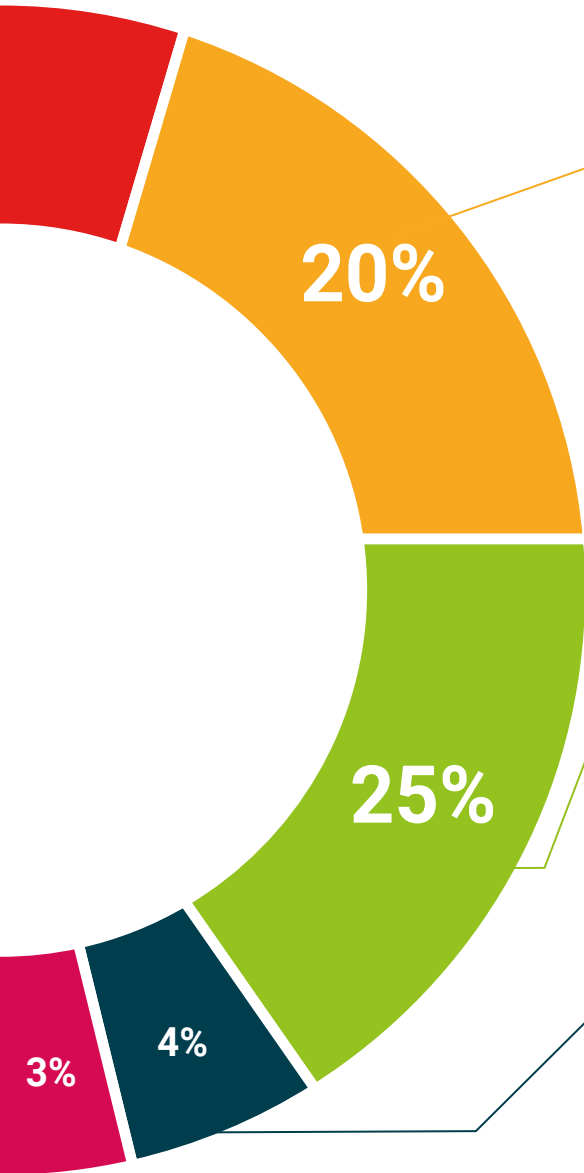
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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 Personalization and Automation in Medical Diagnostics using 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 Personalization and Automation in Medical Diagnostics using 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.

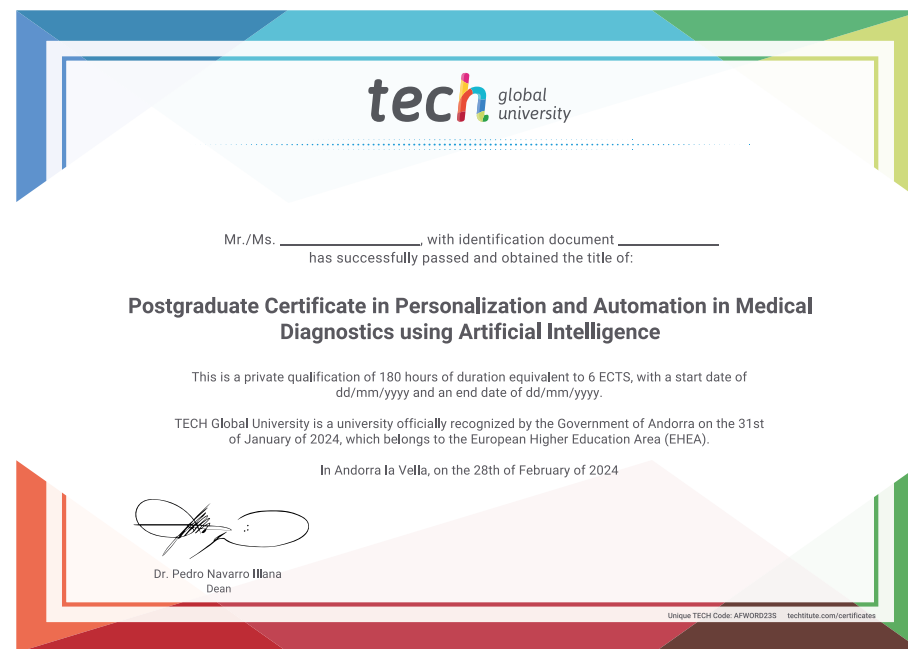
This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Personalization and Automation in Medical Diagnostics using Artificial Intelligence**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





**Postgraduate Certificate**  
Personalization and Automation  
in Medical Diagnostics using  
Artificial Intelligence

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