Postgraduate Certificate

Artificial Intelligence Innovations in Diagnostic Imaging

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Postgraduate Certificate

Artificial Intelligence Innovations in Diagnostic Imaging

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

Website: **www.techtitute.com/us/medicine/postgraduate-certificate/artificial-intelligence-innovations-diagnostic-imaging**

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Introduction

Artificial Intelligence is transforming diagnostic imaging in the medical field, offering tools that improve the accuracy and speed of disease detection. From algorithms that detect Cancer in early stages, to systems that optimize image quality, AI is driving significant advances. Therefore, this program analyzes how these innovations are revolutionizing medical analysis, personalizing diagnostics and improving efficiency in healthcare services, all while facing ethical and regulatory challenges that arise with their implementation. For this reason, TECH offers an innovative program that manages a completely flexible and 100% online modality, which allows students to study from anywhere in the world, without abandoning other obligations.

With this complete 100% online program, you will acquire a solid mastery in the use of Augmented Reality (AR) and Artificial Intelligence techniques applied to 3D images for health"

Artificial Intelligence has proven to be a key tool in the evolution of diagnostic imaging, allowing physicians to obtain more accurate and faster results. Currently, its application goes beyond the simple interpretation of images, facilitating the early identification of diseases and offering advanced support in clinical decision making. In this way, it is possible to understand how AI can be integrated into their daily practice, optimizing both workflow and diagnostic accuracy.

In this Postgraduate Certificate, physicians will begin by exploring the most advanced AI technologies and tools applied to diagnostic imaging, such as IBM Watson Imaging Clinical Review. They will also be updated in the use of leading software platforms in medical image analysis, as well as Deep Learning tools specifically designed for radiology. Throughout the program, they will delve into the statistical methods and algorithms essential for the interpretation of medical images. Therefore, with the help of tools such as DeepMind AI for Breast Cancer Analysis, physicians will master segmentation algorithms, classification techniques, convolutional neural networks and advanced methods to improve image quality.

Finally, advanced techniques, such as subtle pattern detection in low-resolution images, fundamental for early diagnosis of neurodegenerative diseases and applications in Interventional Cardiology, will be reviewed. In addition, Natural Language Processing (NLP) for medical documentation and the use of advanced visualization tools, such as OsiriX MD, will be essential.

Therefore, the Postgraduate Certificate is supported by the innovative Relearning system, developed by TECH, offering a disruptive experience. In fact, it will feature a wide variety of multimedia resources, additional readings and detailed videos. Thanks to its flexible methodology and without fixed schedules, graduates will be able to adapt their academic space to their professional commitments, only needing an electronic device with an Internet connection to access the Virtual Campus

This **Postgraduate Certificate in Artificial Intelligence Innovations in Diagnostic Imaging** contains the most complete and up-to-date scientific program on the market. The most important features include:

- The development of practical cases presented by experts in Artificial Intelligence applied to Diagnostic Imaging
- 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

This Postgraduate Certificate offers physicians a comprehensive update on the latest Artificial Intelligence tools applied to diagnostic imaging, with the support of the renowned Relearning methodology"

Enroll and acquire skills to compare, through advanced statistical methods, the performance of Artificial Intelligence, from the hand of the best digital university in the world, according to Forbes: TECH"

Master the use of Nuance PoweScribe 360 to generate medical image reports automatically, improving efficiency and accuracy in clinical workflow.

Delve into Deep Learning techniques for time series analysis of functional images, improving accuracy in the diagnosis and monitoring of complex diseases.

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 and experienced experts.

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Objectives

Through this Postgraduate Certificate, physicians will be specialize in the use of the most advanced Artificial Intelligence technologies for the processing and analysis of medical images. This will allow them to identify early on various pathologies, such as Cancer, through the accurate detection of anomalies. Professionals will also develop advanced clinical skills in the use of Deep Learning and Convolutional Neural Networks tools. In addition, graduates will be prepared to implement AI models in diagnostic imaging using platforms such as IBM Watson Imaging Clinical Review.

TECH brings a new approach to your professional development! You will enhance your medical career with the use of innovations in Artificial Intelligence, thanks to the best teaching materials in the academic market"

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

- Master tools such as IBM Watson Imaging and NVIDIA Clara to automatically interpret clinical tests
- Gain competencies to perform clinical experiments and results analysis using Artificial Intelligence, with an approach based on improving diagnostic accuracy

You will achieve your goals with the support of an extensive library of multimedia resources, including interactive summaries, graphics and explanatory videos"

03

Course Management

To form the teaching team of this Postgraduate Certificate on Artificial Intelligence Innovations in Diagnostic Imaging, TECH has assembled a group of experts in Artificial Intelligence with extensive experience in the medical field. These experts combine a deep technical knowledge in AI algorithms with a solid understanding of the challenges and opportunities in diagnostic imaging, such as Radiology and Nuclear Medicine. In addition, they will offer a practical and up-to-date perspective, enabling graduates to understand, develop and apply AI-based solutions that improve accuracy and efficiency in medical diagnostics.

The Postgraduate Certificate has the best teaching staff to help you achieve professional success, through a revolutionary pedagogical approach focused on theoretical teaching and practical application"

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

Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"

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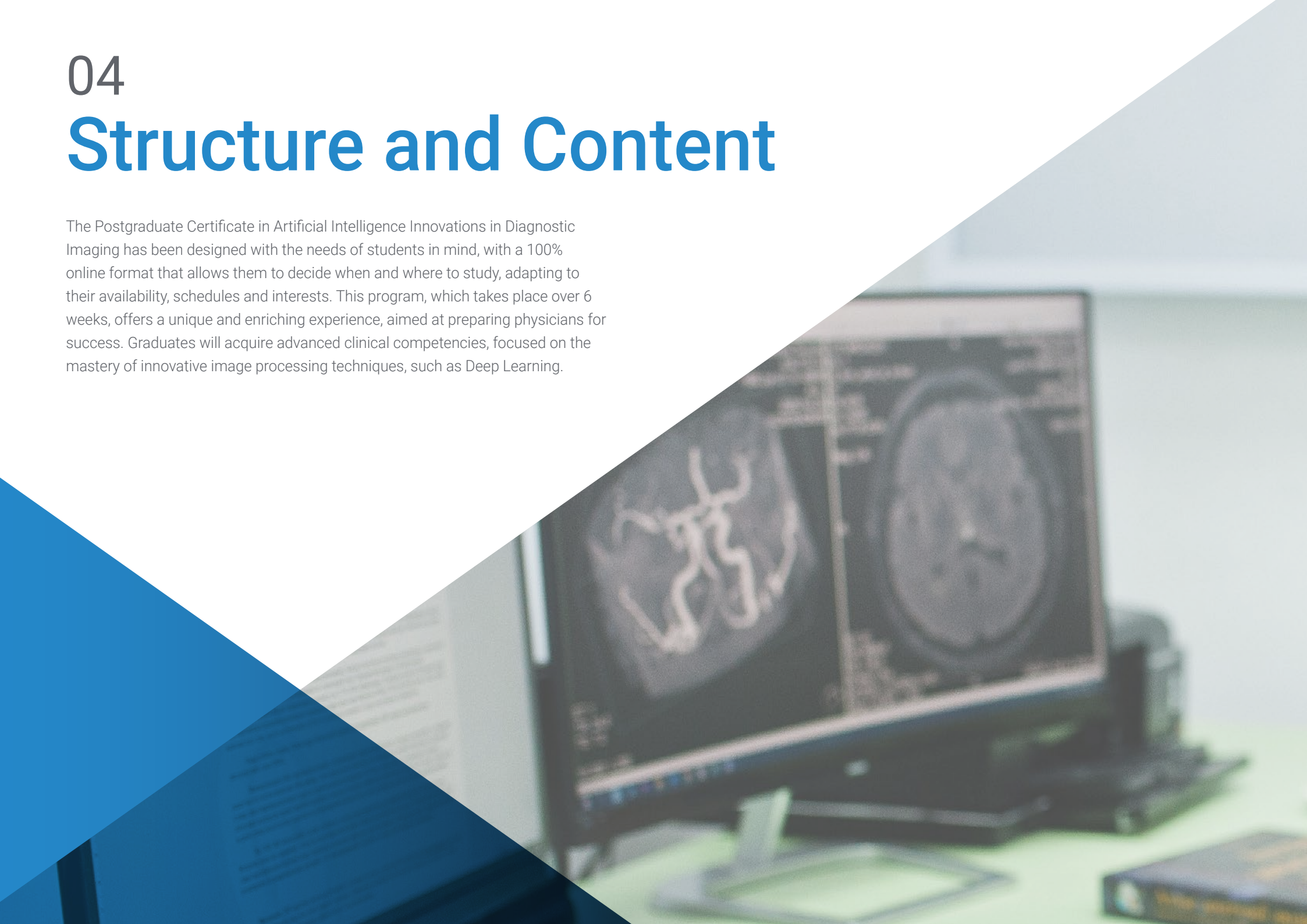
Structure and Content

The Postgraduate Certificate in Artificial Intelligence Innovations in Diagnostic Imaging has been designed with the needs of students in mind, with a 100% online format that allows them to decide when and where to study, adapting to their availability, schedules and interests. This program, which takes place over 6 weeks, offers a unique and enriching experience, aimed at preparing physicians for success. Graduates will acquire advanced clinical competencies, focused on the mastery of innovative image processing techniques, such as Deep Learning.



TECH offers you the most complete Postgraduate Certificate to enhance your skills in the application of Artificial Intelligence in Diagnostic Imaging. What are you waiting for to enroll?"

Module 1. Artificial Intelligence Innovations in Diagnostic Imaging

1.1. Artificial Intelligence Technologies and Tools in Diagnostic Imaging with IBM Watson Imaging Clinical Review
- 1.1.1. Leading Software Platforms for Medical Image Analysis
- 1.1.2. Radiology-Specific Deep Learning Tools
- 1.1.3. Innovations in Hardware to Accelerate Image Processing
- 1.1.4. Integration of Artificial Intelligence Systems in Existing Hospital Infrastructures

1.2. Statistical Methods and Algorithms for Medical Image Interpretation with DeepMind AI for Breast Cancer Analysis
- 1.2.1. Image Segmentation Algorithms
- 1.2.2. Classification and Detection Techniques in Medical Images
- 1.2.3. Use of Convolutional Neural Networks in Radiology
- 1.2.4. Noise Reduction and Image Quality Improvement Methods

1.3. Design of Experiments and Analysis of Results in Diagnostic Imaging with Google Cloud Healthcare API
- 1.3.1. Design of Validation Protocols for Artificial Intelligence Algorithms
- 1.3.2. Statistical Methods for Comparing the Performance of Artificial Intelligence and Radiologists
- 1.3.3. Setting Up Multicenter Studies for Artificial Intelligence Testing
- 1.3.4. Interpretation and Presentation of Performance Test Results

1.4. Detection of Subtle Patterns in Low-Resolution Images
- 1.4.1. Artificial Intelligence for Early Diagnosis of Neurodegenerative Diseases
- 1.4.2. Artificial Intelligence Applications in Interventional Cardiology
- 1.4.3. Use of Artificial Intelligence for the Optimization of Imaging Protocols

1.5. Biomedical Image Analysis and Processing
- 1.5.1. Pre-Processing Techniques to Improve Automatic Interpretation
- 1.5.2. Texture and Pattern Analysis in Histological Images
- 1.5.3. Extraction of Clinical Features from Ultrasound Images
- 1.5.4. Methods for Longitudinal Analysis of Images in Clinical Studies

1.6. Advanced Data Visualization in Diagnostic Imaging with OsiriX MD
- 1.6.1. Development of Graphical Interfaces for 3D Image Exploration
- 1.6.2. Tools for Visualization of Temporal Changes in Medical Images
- 1.6.3. Augmented Reality Techniques for the Teaching of Anatomy
- 1.6.4. Real-Time Visualization Systems for Surgical Procedures

1.7. Natural Language Processing in Medical Image Documentation and Reporting with Nuance PowerScribe 360
- 1.7.1. Automatic Generation of Radiological Reports
- 1.7.2. Extraction of Relevant Information from Electronic Medical Records
- 1.7.3. Semantic Analysis for the Correlation of Imaging and Clinical Findings
- 1.7.4. Image Search and Retrieval Tools Based on Textual Descriptions

1.8. Integration and Processing of Heterogeneous Data in Medical Imaging
- 1.8.1. Fusion of Imaging Modalities for Complete Diagnostics
- 1.8.2. Integration of Laboratory and Genetic Data in the Image Analysis
- 1.8.3. Systems for Handling Large Volumes of Imaging Data
- 1.8.4. Strategies for Normalization of Datasets from Multiple Sources

1.9. Applications of Neural Networks in Medical Image Interpretation with Zebra Medical Vision
- 1.9.1. Use of Generative Networks for the Creation of Synthetic Medical Images
- 1.9.2. Neural Networks for Automatic Tumor Classification
- 1.9.3. Deep Learning for the Analysis of Time Series in Functional Imaging
- 1.9.4. Fitting of Pre-Trained Models on Specific Medical Image Datasets

1.10. Predictive Modeling and its Impact on Diagnostic Imaging with IBM Watson Oncology
- 1.10.1. Predictive Models for Risk Assessment in Oncology Patients
- 1.10.2. Predictive Tools for Chronic Disease Follow-Up
- 1.10.3. Survival Analysis Using Medical Imaging Data
- 1.10.4. Prediction of Disease Progression using Machine Learning Techniques

05

Methodology

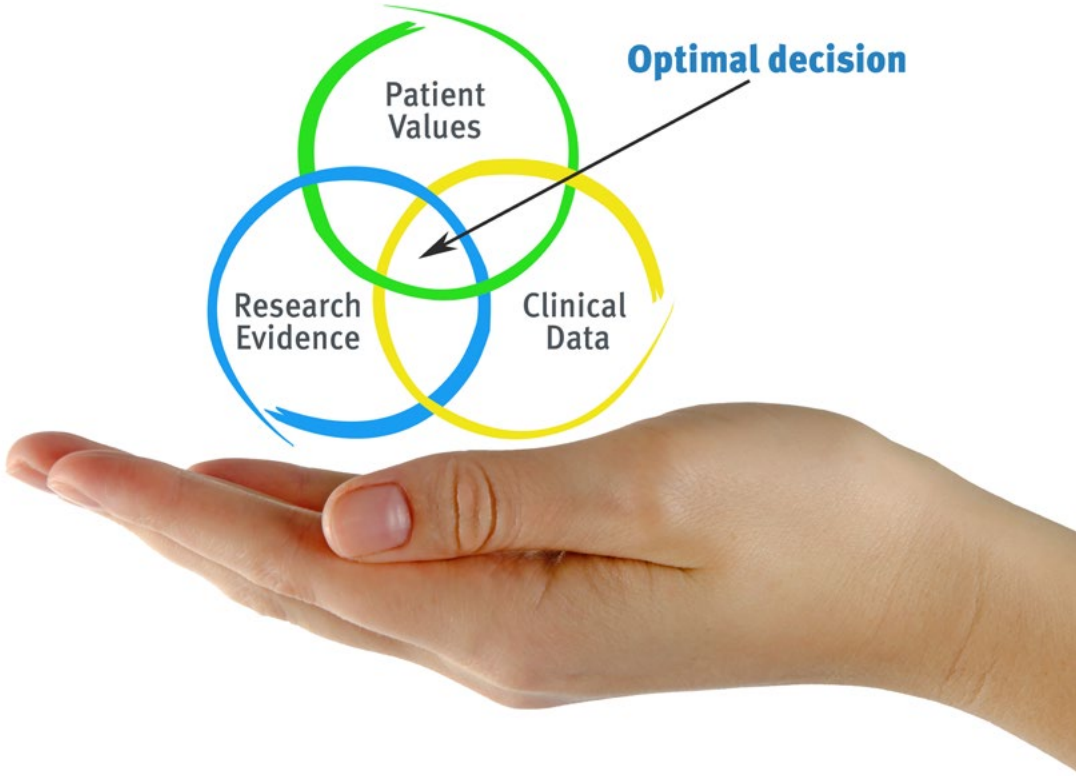
This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: Relearning.
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the New England Journal of Medicine have considered 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"

At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in the physician's professional practice.

Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method"

The effectiveness of the method is justified by four fundamental achievements:

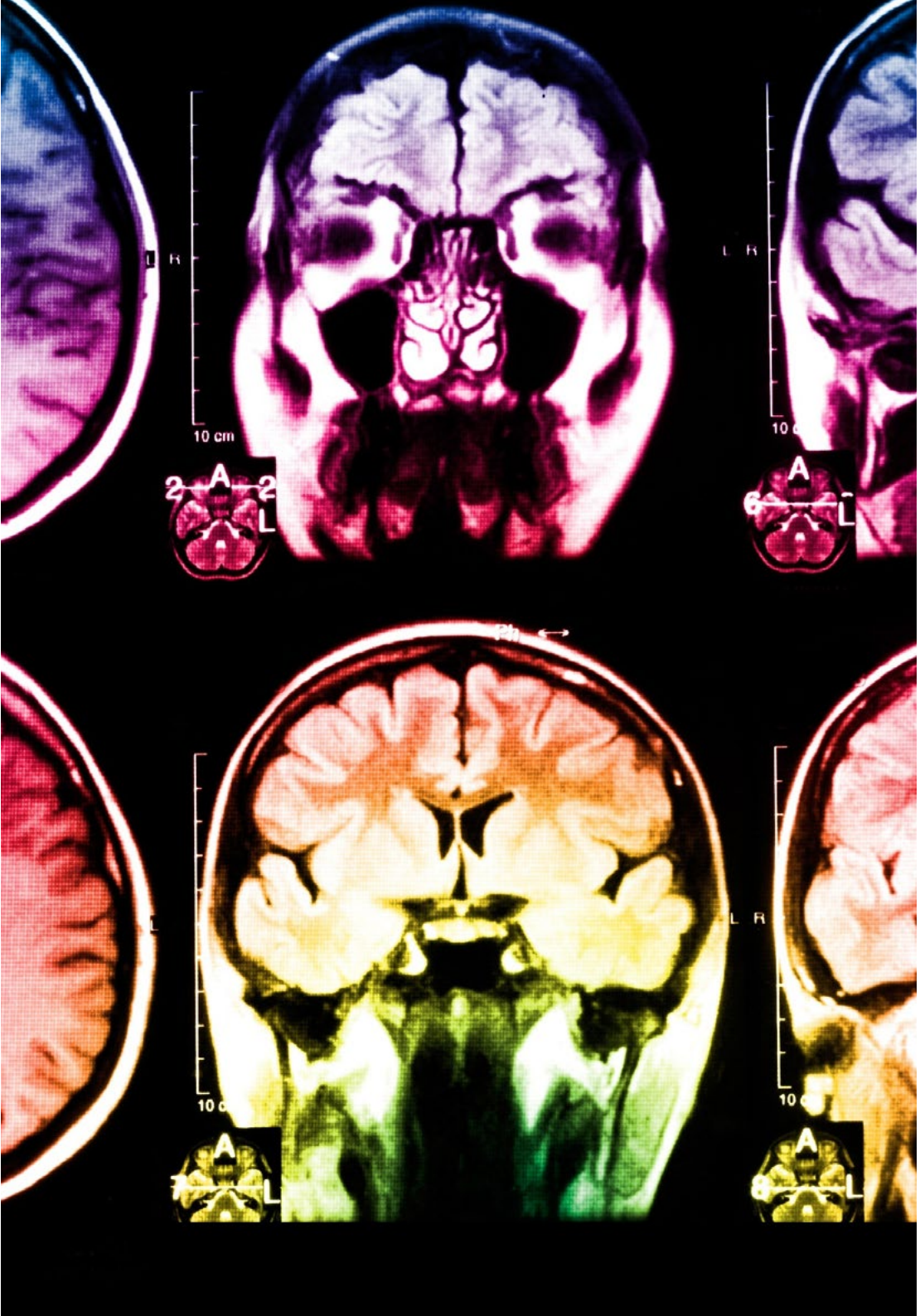
1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

Professionals will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

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

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.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.

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.

Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.

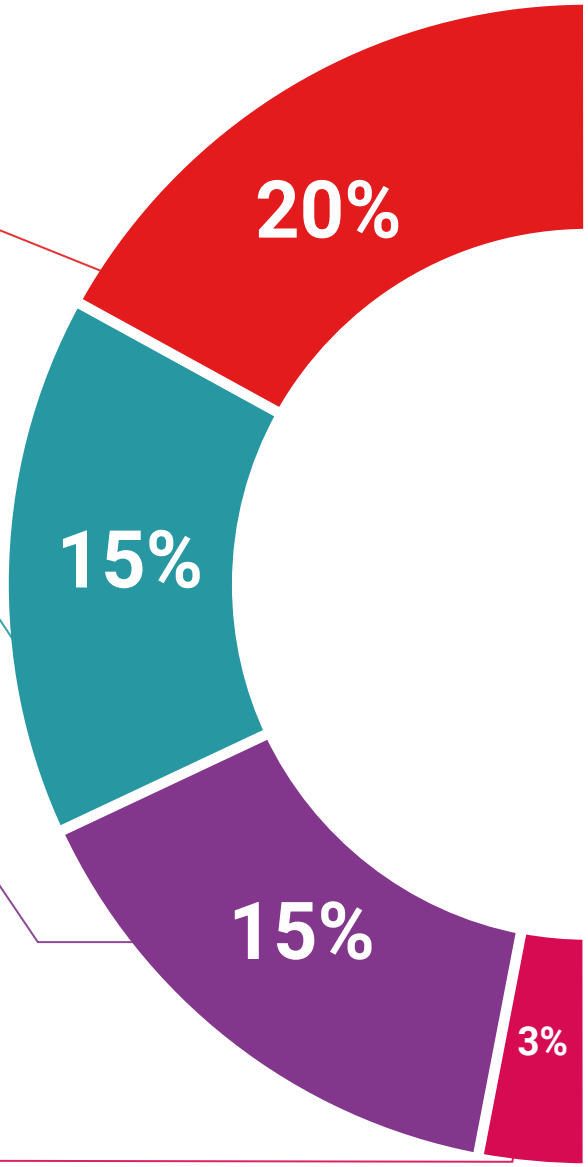
Interactive Summaries

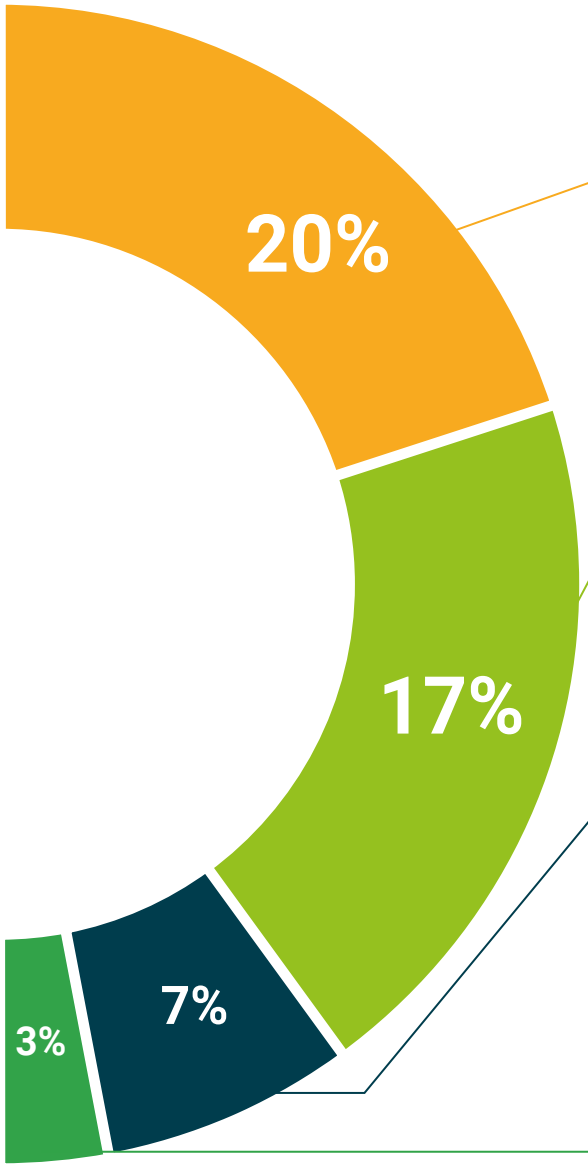
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

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.





Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.

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.

Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.

06

Certificate

The Postgraduate Certificate in Artificial Intelligence Innovations in Diagnostic Imaging 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 Artificial Intelligence Innovations in Diagnostic Imaging** 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 Artificial Intelligence Innovations in Diagnostic Imaging**

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 Artificial Intelligence Innovations in Diagnostic Imaging

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

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. 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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