

# Postgraduate Certificate

## Ethical and Legal Aspects of Artificial Intelligence in Diagnostic Imaging





## Postgraduate Certificate Ethical and Legal Aspects of Artificial Intelligence in Diagnostic Imaging

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

Website: [www.techtute.com/us/medicine/postgraduate-certificate/ethical-legal-aspects-artificial-intelligence-diagnostic-imaging](http://www.techtute.com/us/medicine/postgraduate-certificate/ethical-legal-aspects-artificial-intelligence-diagnostic-imaging)

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# 01

# Introduction

The use of Artificial Intelligence in diagnostic imaging is changing the field of Medicine exponentially, but it also poses ethical and legal challenges that cannot be ignored. Aspects such as algorithm transparency, patient data privacy and legal liability in case of diagnostic errors are some of the most relevant concerns. In this scenario, TECH has developed a comprehensive program in a completely online format, providing flexibility so that professionals can access the contents in a convenient way and adapted to their schedules. In addition, the innovative learning methodology known as Relearning is included, which is a pioneer in this institution.





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*Through this 100% online program, you will delve into the current debates surrounding the implementation of AI in the medical field, focusing on the ethical implications of its use in diagnostic imaging”*

Artificial Intelligence in diagnostic imaging represents a significant advance for medical practice. Its main challenges include the transparency of algorithms, crucial to ensure that automated decisions are understandable and reliable. In fact, it is essential for physicians to know how AI can impact equity in access to care and how legal liabilities are assigned in case of errors.

This is how this Postgraduate Certificate was born, which will address the ethical aspects of Artificial Intelligence (AI) in diagnostic imaging, using tools such as Ethics and Algorithms Toolkit. In this sense, professionals will become familiar with the fundamental ethical principles in the use of AI, with a special emphasis on the management of algorithmic biases and their impact on the fairness of diagnosis.

Legal and regulatory considerations will also be addressed, using resources such as Compliance.ai to understand the current regulatory framework for Artificial Intelligence in medical imaging. In addition, privacy regulations and data protection, as well as validation and certification requirements for these algorithms in healthcare will be discussed. The possible scenarios of legal liability in case of diagnostic errors will also be analyzed.

In turn, the academic itinerary will cover the impact of AI on equity and access to healthcare, through the use of tools such as AI for Good. Therefore, it will delve into how AI can influence the distribution of medical services and strategies to ensure equitable access to this technology, even in resource-limited settings.

In this way, the study plan incorporates a completely online method, providing students with a complete experience without the need to travel to an educational center or adhere to a pre-established schedule. Additionally, the Relearning methodology will be used, which is characterized by the repetition of the most relevant concepts for an effective understanding of the contents.

This **Postgraduate Certificate in Ethical and Legal Aspects of Artificial Intelligence 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 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



*Enroll in this program, in which you will address key issues related to the integration of advanced technologies in the medical field. With all the TECH quality guarantees!"*

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*You will examine fundamental ethical principles, such as data privacy, fairness in access to AI, and transparency in algorithms, with particular attention to the impact on patients”*

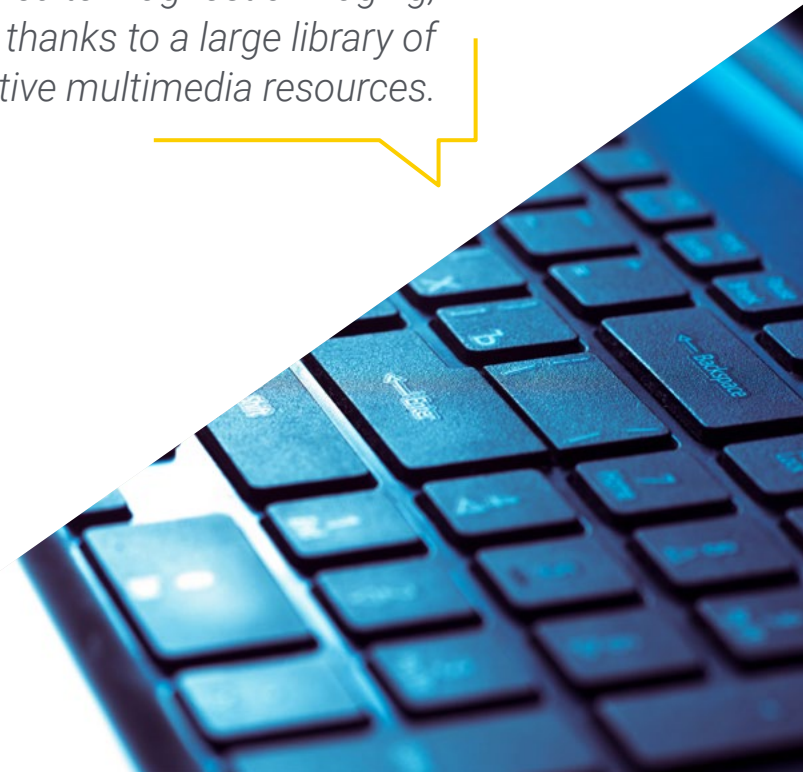
The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

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, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*You will be part of the most up-to-date discussions on the ethical and legal implications of Artificial Intelligence in the medical field, supported by the revolutionary Relearning methodology.*

*Learn about the regulations on the transparency of algorithms in the field of Artificial Intelligence applied to Diagnostic Imaging, thanks to a large library of innovative multimedia resources.*



# 02 Objectives

The Postgraduate Certificate in Ethical and Legal Aspects of Artificial Intelligence in Diagnostic Imaging has been designed to provide healthcare professionals with the most current and essential knowledge in this field. Therefore, it will delve into the implications of AI errors in clinical practice, with the goal of ensuring solid and effective specialization. In this way, a series of general and specific objectives will be met, ensuring that graduates will be able to meet the ethical and legal challenges of AI in medical diagnosis.







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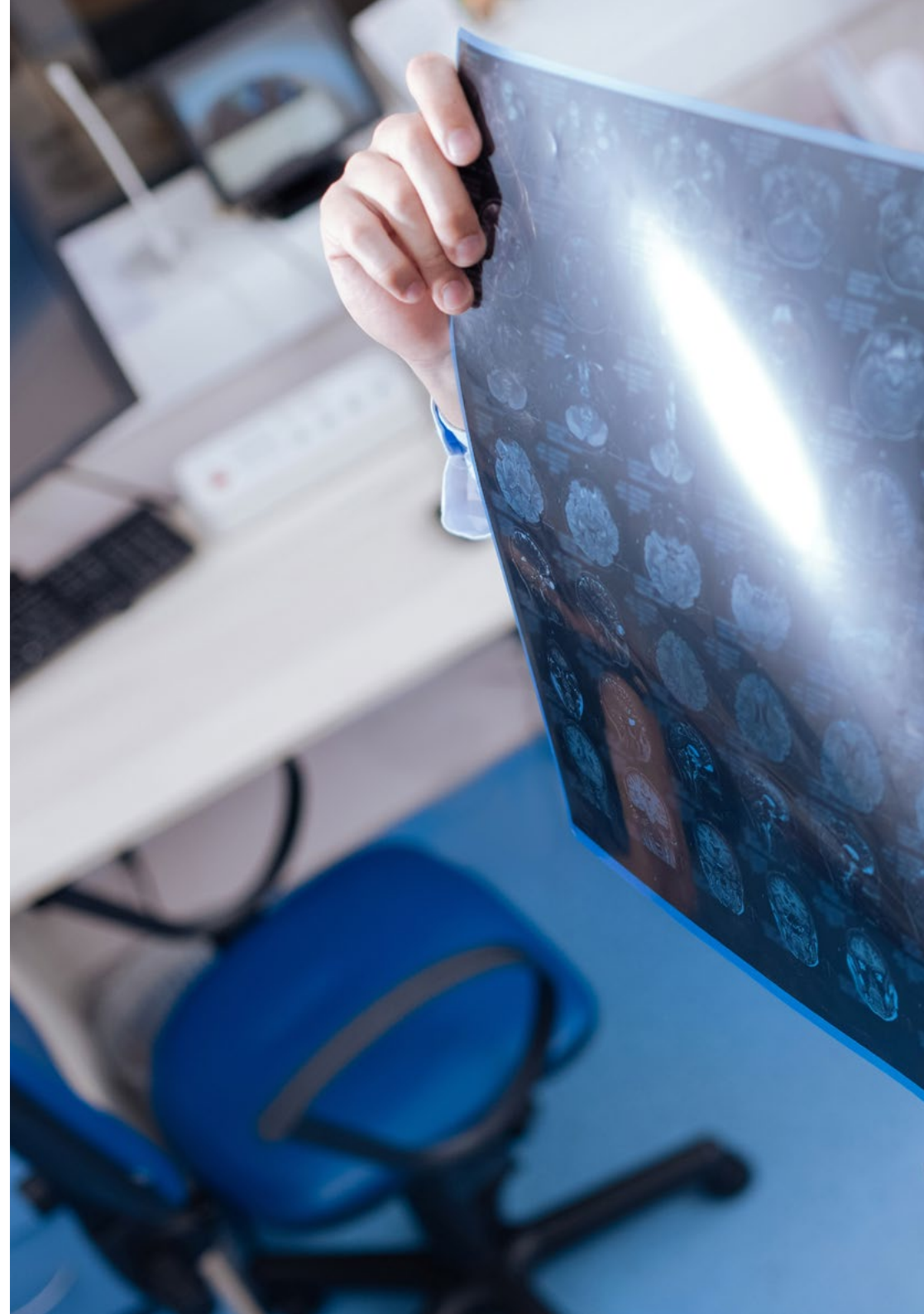
*You will address the general and specific objectives that this program offers you to update your skills in the Ethical and Legal Aspects of Artificial Intelligence in Diagnostic Imaging. And in as little as 6 weeks!"*



## 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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- Have a holistic understanding of the regulatory and deontological principles governing the use of Artificial Intelligence in the field of Health, including aspects such as informed consent
- Be able to audit Artificial Intelligence models used in clinical practice, ensuring their transparency and accountability in medical decision making



*You will implement solutions that efficiently integrate the legal regulations of Artificial Intelligence into clinical practice, streamlining and facilitating successful medical diagnosis”*



# 03

## Course Management

To ensure the high educational level that distinguishes TECH programs, this course is led by highly regarded experts in the ethical challenges of using Artificial Intelligence in diagnostic imaging. In fact, these professionals have extensive experience in the sector, which will ensure that the content provided is aligned with the most recent advances. Therefore, clinicians will receive up-to-date specialization on topics such as advanced techniques for anonymizing patient data and the impact of security breaches on public trust.





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*Thanks to the guidance of the faculty, you will delve into the current and emerging international legal framework that regulate the use of Artificial Intelligence in the interpretation and analysis of medical images”*

## 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

The content of this Postgraduate Certificate has been carefully designed to provide professionals with the most current and relevant knowledge on the ethical considerations of Artificial Intelligence in clinical research, using tools such as Global Alliance for Genomics and Health (GA4GH). Therefore, throughout the program, cutting-edge didactic resources, such as interactive summaries, explanatory videos and self-assessment tests, will be available to enable graduates to acquire a comprehensive preparation. In addition, the flexible 100% online format will adapt to the physician's professional and personal responsibilities, facilitating seamless specialization.







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*You will master tools such as Duality SecurePlus, which will allow you to carry out secure data protection in research projects, ensure the efficient use of Artificial Intelligence in the medical field”*

## Module 1. Ethical and Legal Aspects of Artificial Intelligence in Diagnostic Imaging

- 1.1. Ethics in the Application of Artificial Intelligence in Diagnostic Imaging with Ethics and Algorithms Toolkit
  - 1.1.1. Fundamental Ethical Principles in the Use of Artificial Intelligence for Diagnosis
  - 1.1.2. Algorithmic Bias Management and its Impact on Diagnostic Fairness
  - 1.1.3. Informed Consent in the Era of Diagnostic Artificial Intelligence
  - 1.1.4. Ethical Challenges in the International Implementation of Artificial Intelligence Technologies
- 1.2. Legal and Regulatory Considerations in Artificial Intelligence Applied to Medical Imaging with Compliance.ai
  - 1.2.1. Current Regulatory Framework for Artificial Intelligence in Diagnostic Imaging
  - 1.2.2. Compliance with Privacy and Data Protection Regulations
  - 1.2.3. Validation and Certification Requirements for Artificial Intelligence Algorithms in Healthcare
  - 1.2.4. Legal Liability in Case of Diagnostic Errors due to Artificial Intelligence
- 1.3. Informed Consent and Ethical Aspects in the Use of Clinical Data
  - 1.3.1. Review of Informed Consent Processes Adapted to Artificial Intelligence
  - 1.3.2. Patient Education on the Use of Artificial Intelligence in their Medical Care
  - 1.3.3. Transparency in the Use of Clinical Data for Artificial Intelligence Training
  - 1.3.4. Respect for Patient Autonomy in Decisions Based on Artificial Intelligence
- 1.4. Artificial Intelligence and Accountability in Clinical Research
  - 1.4.1. Assignment of Responsibilities in the Use of Artificial Intelligence for Diagnosis
  - 1.4.2. Implications of Artificial Intelligence Errors in Clinical Practice
  - 1.4.3. Insurance and Coverage for Risks Associated with the Use of Artificial Intelligence
  - 1.4.4. Strategies for the Management of Incidents Related to Artificial Intelligence
- 1.5. Impact of Artificial Intelligence on Equity and Access to Health Care with AI for Good
  - 1.5.1. Assessment of the Impact of Artificial Intelligence on the Distribution of Medical Services
  - 1.5.2. Strategies to Ensure Equitable Access to AI Artificial Intelligence Technology
  - 1.5.3. Artificial Intelligence as a Tool to Reduce Health Disparities
  - 1.5.4. Case Studies on the Implementation of Artificial Intelligence in Resource-Limited Settings
- 1.6. Privacy and Data Protection in Research Projects using Duality SecurePlus
  - 1.6.1. Strategies for Ensuring Data Confidentiality in Artificial Intelligence Projects
  - 1.6.2. Advanced Techniques for Patient Data Anonymization
  - 1.6.3. Legal and Ethical Challenges in the Protection of Personal Data
  - 1.6.4. Impact of security breaches on public trust and confidence
- 1.7. Artificial Intelligence and Sustainability in Biomedical Research with Green Algorithm
  - 1.7.1. Use of Artificial Intelligence to Improve Efficiency and Sustainability in Research
  - 1.7.2. Life Cycle Assessment of Artificial Intelligence Technologies in Healthcare
  - 1.7.3. Environmental Impact of Artificial Intelligence Technology Infrastructure
  - 1.7.4. Sustainable Practices in the Development and Deployment of Artificial Intelligence
- 1.8. Auditing and Explainability of Artificial Intelligence Models in the Clinical Setting with IBM AI Fairness 360
  - 1.8.1. Importance of Regular Auditing of AI Algorithms
  - 1.8.2. Techniques to Improve the Explainability of AI Models
  - 1.8.3. Challenges in Communicating AI-Based Decisions to Patients and Physicians
  - 1.8.4. Regulations on the Transparency of Artificial Intelligence Algorithms in Healthcare
- 1.9. Innovation and Entrepreneurship in the Field of Clinical Artificial Intelligence with Hindsight
  - 1.9.1. Opportunities for Startups in Artificial Intelligence Technologies for Healthcare
  - 1.9.2. Collaboration Between the Public and Private Sectors in the Development of Artificial Intelligence
  - 1.9.3. Challenges for Entrepreneurs in the Healthcare Regulatory Environment
  - 1.9.4. Success Stories and Lessons Learned in Clinical Artificial Intelligence Entrepreneurship
- 1.10. Ethical Considerations in International Clinical Research Collaboration with Global Alliance for Genomics and Health with GA4GH
  - 1.10.1. Ethical Coordination in International AI Projects
  - 1.10.2. Managing Cultural and Regulatory Differences in International Collaborations
  - 1.10.3. Strategies for Equitable Inclusion in Global Studies
  - 1.10.4. Challenges and Solutions in Data Sharing



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*Thanks to this Postgraduate Certificate, you will ensure regulatory compliance and professional responsibility in the use of advanced Artificial Intelligence tools in diagnostic imaging”*

05

# Methodology

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

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





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

## 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.

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*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

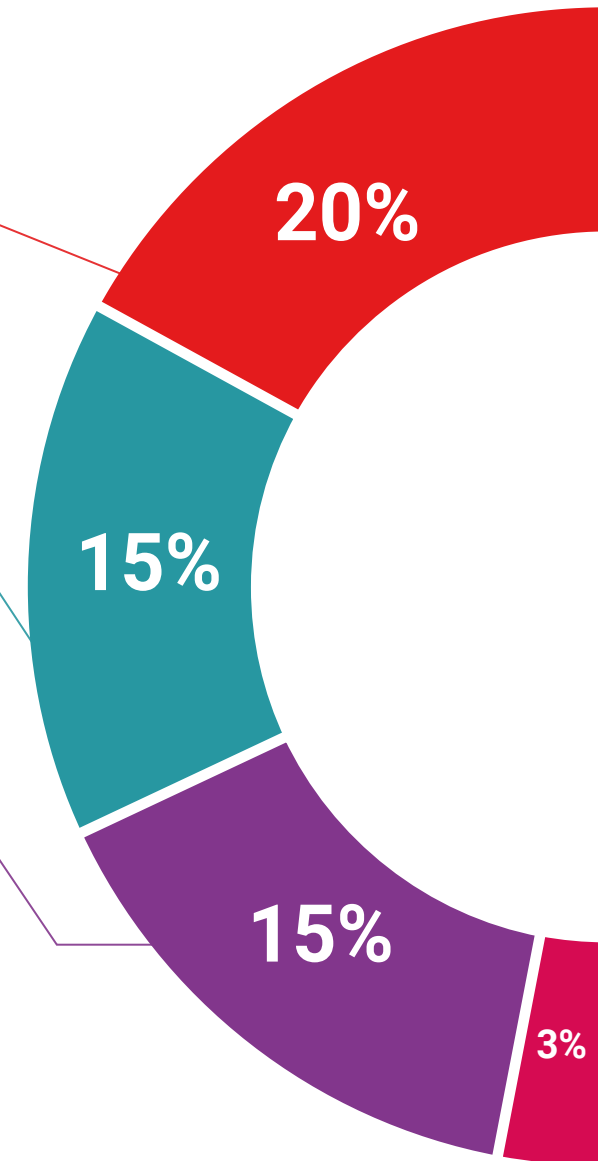
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

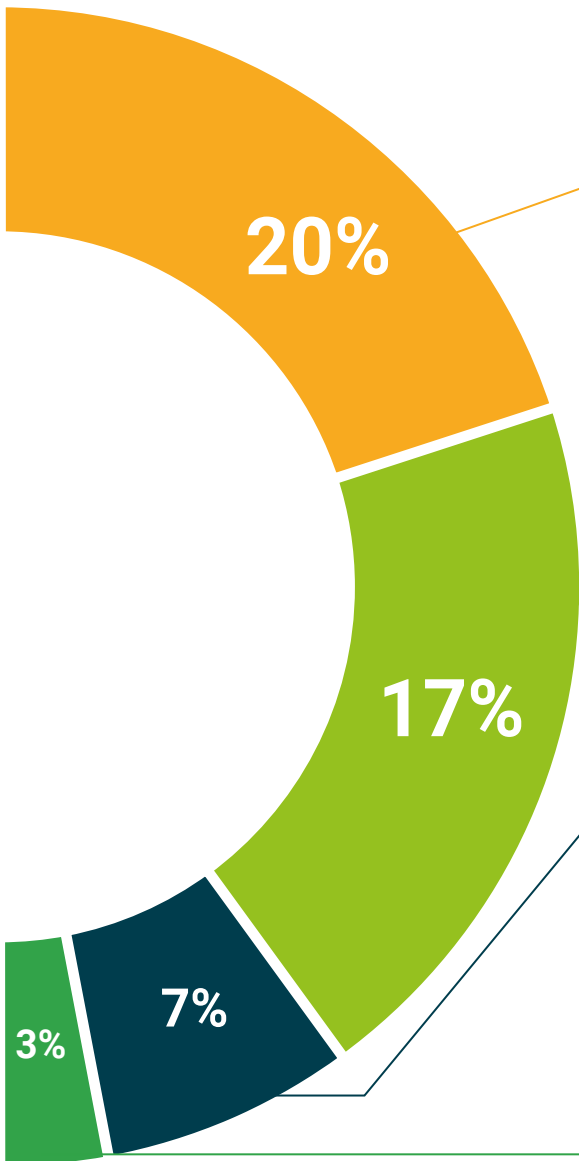
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### 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 Ethical and Legal Aspects of Artificial Intelligence 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 Ethical and Legal Aspects of Artificial Intelligence 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 Ethical and Legal Aspects of Artificial Intelligence in Diagnostic Imaging**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



\*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.

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development languages  
virtual classroom

**tech** global  
university

**Postgraduate Certificate**  
Ethical and Legal Aspects  
of Artificial Intelligence in  
Diagnostic Imaging

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