Postgraduate Certificate
Ethics and Regulation in Medical Artificial Intelligence

tech technological university

Postgraduate Certificate
Ethics and Regulation in Medical Artificial Intelligence

- » Modality: **online**
- » Duration: **6 weeks**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/us/medicine/postgraduate-certificate/ethics-regulation-medical-artificial-intelligence**

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01
Introduction

The use of Artificial Intelligence in the health field must be carefully addressed to ensure its minimal impact on the social fabric. If clinical interaction is reduced only to these intelligent systems, it could decrease, among other things, the doctor's empathy towards his patients. As a result, the latter could suffer negative experiences that would make them lose confidence in specialists. In addition, excessive technological dependence would make the community vulnerable to technical failures, with serious consequences in emergency situations. For this reason, TECH has developed this advanced 100% online program that updates in a holistic way to physicians about the ethical implications of using new computer programs based on Machine Learning Algorithms.

Addresses the sustainable development of Artificial Intelligence and its impact on Medicine through TECH, the best digital university in the world according to Forbes"

Therapeutic processes with AI involve manipulation of sensitive medical data. During these procedures, experts need information from their patients ranging from their medical history to the results of medical tests and prescription drugs. In this context, physicians must implement robust security measures aimed at protecting patients' privacy. To this must be added the need to comply with regulations in this area, such as the General Data Protection Regulation. Otherwise, specialists face legal sanctions, including financial penalties. In the most serious cases of violation of privacy, doctors would lose their medical license, which would prevent them from continuing their profession.

To ensure ethical foundations in the use of AI, TECH will implement this innovative program that will delve into data privacy and consent in health contexts. The academic itinerary will delve into data governance, as well as the regulatory frameworks of Intelligent Systems. In turn, the syllabus will promote a medical care focused on the human being, enhancing values such as confidentiality, respect or honesty. In this sense, teaching materials will address the need for equity and transparency during machine learning.

To reinforce these contents, the methodology of this program reinforces its innovative character. TECH offers a 100% online educational environment, tailored to the needs of professionals seeking to advance their careers. It also employs the Relearningmethodology, based on the repetition of key concepts to fix knowledge and facilitate learning. In this way, the combination of flexibility and a robust pedagogical approach makes it highly accessible. Graduates will fulfill their objective of updating their knowledge while learning about the latest trends in the technology market.

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

- The development of case studies presented by experts in Artificial Intelligence in Clinical Practice
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential 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

Do you want to design the most human-oriented care systems? Catch it in 6 weeks thanks to this state-of-the-art program for the use of AI in medicine"

"You will fulfill your objectives thanks to the very complete didactic tools of this program among which stand out explanatory videos and interactive summaries"

You will stand out for fostering ethical practices, equity and transparency in the development of systems based on Intelligent Computing.

With the TECH Relearning system you will integrate concepts in a natural and progressive way. Forget about memorizing!

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 academic year For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

02
Objectives

Thanks to this Postgraduate Certificate, students will acquire a deep understanding of the fundamental ethical principles related to medical AI. In this sense, graduates will master the principles of data governance, so their clinical practices will be characterized by regulatory compliance. In addition, experts will develop new competencies to design human-centered Intelligent Computing systems. In this way, professionals will promote transparency during machine learning and ensure the quality of models through comprehensive assessments.

You will develop critical awareness of ethical health issues and ensure safety during Machine Learning"

General Objectives

- Understand the theoretical foundations of Artificial Intelligence
- Study the different types of data and understand the data lifecycle
- Evaluate the crucial role of data in the development and implementation of AI solutions
- Delve into algorithms and complexity to solve specific problems
- Explore the theoretical basis of neural networks for Deep Learning development
- Analyze bio-inspired computing and its relevance in the development of intelligent systems
- Analyze current strategies of Artificial Intelligence in various fields, identifying opportunities and challenges
- Critically evaluate the benefits and limitations of AI in healthcare, identifying potential pitfalls and providing an informed assessment of its clinical application
- Recognize the importance of collaboration across disciplines to develop effective AI solutions
- Gain a comprehensive perspective of emerging trends and technological innovations in AI applied to healthcare
- Acquire solid knowledge in medical data acquisition, filtering, and preprocessing
- Understand the ethical principles and legal regulations applicable to the implementation of AI in medicine, promoting ethical practices, fairness, and transparency

Specific Objectives

- Understand the fundamental ethical principles and legal regulations applicable to the implementation of AI in medicine
- Master the principles of data governance
- Understand international and local regulatory frameworks
- Ensuring regulatory compliance in the use of AI data and tools in the healthcare sector
- Develop skills to design human-centered AI systems, promoting equity and transparency in machine learning

A program that will allow you to exercise in simulated environments, so that you achieve an immersive learning with which to practice in front of real situations"

03
Course Management

Loyal to its philosophy of offering the highest educational excellence, TECH has a reputed teaching team. These specialists have an extensive professional background, being part of renowned hospitals. In addition, they have a deep knowledge of ethical principles applied to medical AI and offer the most advanced technological resources in the healthcare market. In this way, students have the guarantees they need to update their competencies and acquire new skills to provide services to their patients.

Update your knowledge of Ethics and Regulation in Medical Artificial Intelligence with the best specialists"

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
- Ph.D. in Psychology from the University of Castilla - La Mancha
- Ph.D. in Economics, Business and Finance from the Camilo José Cela University
- Ph.D. in Psychology from University of Castilla – La Mancha
- Professional Master's Degree in Executive MBA by the Isabel I University
- Professional Master's Degree in Sales and Marketing Management, Isabel I University
- Expert Master's Degree in Big Data by Hadoop Training
- Professional Master's Degree in Advanced Information Technologies from the University of Castilla - La Mancha
- Member of: SMILE Research Group

Mr. Martín-Palomino Sahagún, Fernando

- *Chief Technology Officer* and R+D+i *Director* at AURA Diagnostics (medTech)
- Business Development at SARLIN
- Chief Operating Officer at Alliance Diagnostics
- Chief Innovation Officer at Alliance Medical
- *Chief Information Officer* at Alliance Medical
- *Field Engineer & Project Management* in Digital Radiology at Kodak
- MBA from Polytechnic University of Madrid
- *Executive Master* in Marketing and Sales at ESADE
- Telecommunications Engineer from the University Alfonso X El Sabio

Professors

Dr. Carrasco González, Ramón Alberto

- Specialist in Computer Science and Artificial Intelligence
- Researcher
- Head of *Business Intelligence* (Marketing) at Caja General de Ahorros de Granada and Banco Mare Nostrum
- Head of Information Systems (*Data Warehousing and Business Intelligence*) at Caja General de Ahorros de Granada and Banco Mare Nostrum
- Ph.D. in Artificial Intelligence from the University of Granada
- Computer Engineer from the University of Granada

Mr. Popescu Radu, Daniel Vasile

- Pharmacology, Nutrition and Diet Specialist
- Freelance Producer of Didactic and Scientific Contents
- Nutritionist and Community Dietitian
- Community Pharmacist
- Researcher
- Professional Master's Degree in Nutrition and Health at the Oberta University of Catalonia (UOC)
- Professional Master's Degree in Psychopharmacology from the University of Valencia
- Pharmacist by the Complutense University of Madrid
- Nutritionist-Dietician at the European University Miguel de Cervantes

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Structure and Content

This program provides an in-depth analysis of the ethical, privacy and regulatory aspects related to the implementation of AI in health. The syllabus will explore fundamental moral principles in this regard, emphasizing privacy and informed consent. The social impact of Intelligent Automation will also be addressed, highlighting considerations about sustainable development, equity and transparency. In addition, the teaching materials will delve into both regulatory frameworks in data governance and various security policies.

Update your knowledge in medical AI regulatory frameworks through innovative multimedia content"

Module 1. Ethics and Regulation in Medical AI

1.1. Ethical Principles in the Use of AI in Medicine

    1.1.1. Analysis and Adoption of Ethical Principles in the Development and Use of Medical AI Systems

    1.1.2. Integrating Ethical Values into AI-Assisted Decision-Making in Medical Settings

    1.1.3. Establishing Ethical Guidelines to Ensure the Responsible Use of Artificial Intelligence in Medicine

1.2. Data Privacy and Consent in Medical Contexts

    1.2.1. Developing Privacy Policies to Protect Sensitive Data in Medical AI Applications

    1.2.2. Guarantee of Informed Consent in the Collection and Use of Personal Data in the Medical Field

    1.2.3. Implementing Security Measures to Safeguard Patient Privacy in Medical AI Environments

1.3. Ethics in Research and Development of Medical AI Systems

    1.3.1. Ethical Evaluation of Research Protocols in the Development of AI Systems for Health

    1.3.2. Ensuring Transparency and Ethical Rigor in the Development and Validation of Medical AI Systems

    1.3.3. Ethical Considerations in the Publication and Sharing of Medical AI Results

1.4. Social Impact and Accountability in Health AI

    1.4.1. Analysis of the Social Impact of AI on Health Service Delivery

    1.4.2. Development of Strategies to Mitigate Risks and Ethical Responsibility in Medical AI Applications

    1.4.3. Continuous Social Impact Assessment and Adaptation of AI Systems to Positively Contribute to Public Health

1.5. Sustainable Development of AI in the Health Sector

    1.5.1. Integration of Sustainable Practices in the Development and Maintenance of AI Systems in Health

    1.5.2. Environmental and Economic Impact Assessment of AI Technologies in Health

    1.5.3. Development of Sustainable Business Models to Ensure Continuity and Improvement of AI Solutions in the Health Sector

1.6. Data Governance and International Regulatory Frameworks in Medical AI

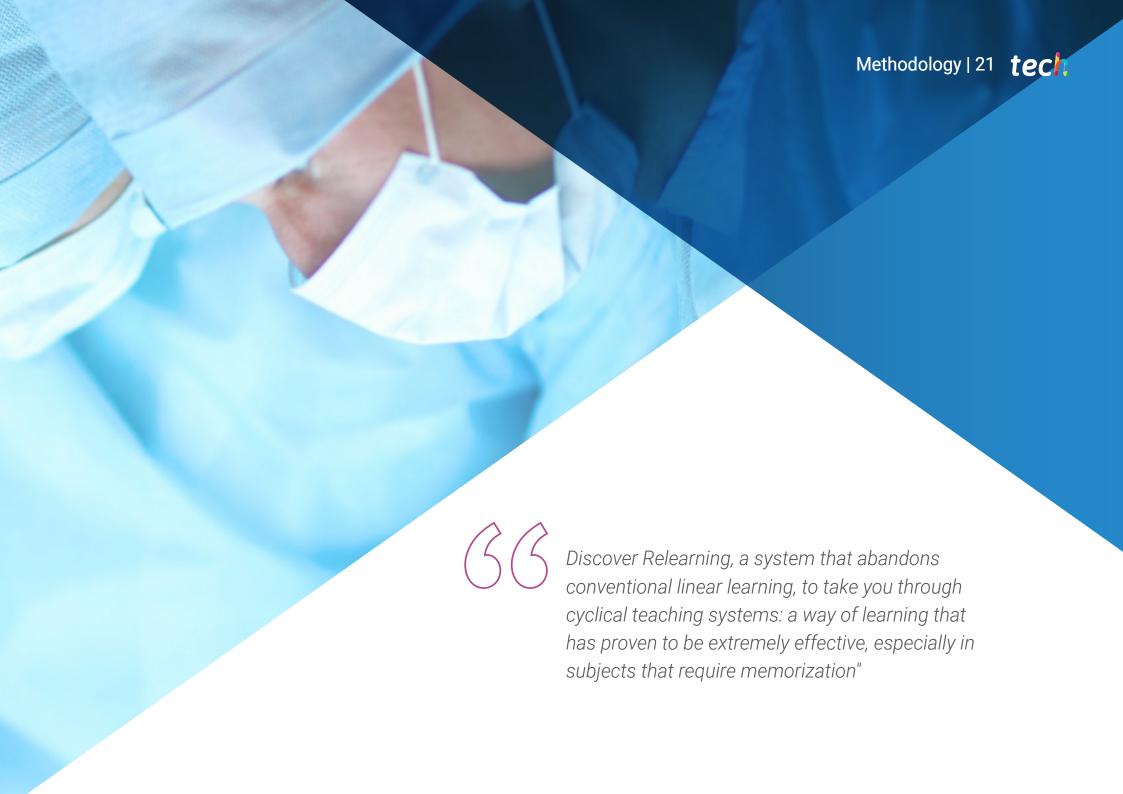   1.6.1. Development of Governance Frameworks for Ethical and Efficient Data Management in Medical AI Applications

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.

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)

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.

20%

15%

15%

3%

20%

17%

7%

3%

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 Ethics and Regulation in Medical Artificial Intelligence guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.1

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

This **Postgraduate Certificate in Ethics and Regulation in Medical Artificial Intelligence** contains the most complete and up-to-date scientific on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Po,and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Ethics and Regulation in Medical Artificial Intelligence**
Official Nº of Hours: **150 h.**

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Awards the following

DIPLOMA
to
Mr./Ms. _____, with identification number _____.
For having passed and accredited the following program

POSTGRADUATE CERTIFICATE
in

Ethics and Regulation in Medical Artificial Intelligence

This is a qualification awarded by this University, equivalent to 150 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
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 EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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