Postgraduate Certificate
Ethical Aspects of Artificial Intelligence in Clinical Research

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Postgraduate Certificate
Ethical Aspects of Artificial Intelligence in Clinical Research

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

Website: **www.techtitute.com/us/medicine/postgraduate-certificate/ethical-aspects-artificial-intelligence-clinical-research**

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01
Introduction

Ethical Aspects in the integration of Artificial Intelligence (AI) in clinical research play a fundamental role in ensuring integrity, transparency and fairness in the development of new medical technologies. These principles allow for critical evaluation of the data collected, ensuring the privacy and confidentiality of patient information. In addition, they promote fairness in access to care by mitigating potential algorithmic biases, thereby facilitating more informed and accurate clinical decisions. Therefore, TECH has developed a program that will immerse physicians in the innovative advancement of AI in the healthcare field. Supported by the *Relearning* methodology, this teaching system will focus on the repetition of fundamental concepts.

The incorporation of ethical considerations in your daily practice, applying AI in Clinical Research, will drive more ethical and responsible medical advances"

Ethical implementation of AI ensures the protection of privacy and confidentiality of patient data in the clinical setting, mitigating concerns related to security and privacy. In addition, transparency in the algorithms used facilitates a clearer understanding of decision-making processes, fostering trust in both healthcare professionals and study participants. Equity in access to medical care is also promoted, since ethical AI avoids unfair biases and ensures that all individuals have the same opportunities to participate in clinical research.

And so this program in Ethical Aspects of Artificial Intelligence in Clinical Research emerged, which is presented as a comprehensive immersion in the ethical challenges and legal considerations linked to the implementation of AI in the healthcare setting. Therefore, the syllabus will dive into fundamental aspects such as the management of informed consent and liability in research, highlighting the vital importance of addressing these concerns when employing advanced technologies in the biomedical field.

Likewise, by delving into the future of Clinical Research in the era of AI, the sustainability of biomedical research will be explored, analyzing future trends and advances, and analyzing innovation in this field, in order to address ethical challenges. In addition, it will provide the necessary tools to navigate responsibly and ethically in the fast-paced world of AI applied to medicine.

TECH has designed a complete educational program, based on the innovative methodology of *Relearning.* This method will focus on the repetition of fundamental ideas, to ensure a solid understanding of all content. Only an electronic device with an Internet connection will be needed to access the resources, anytime, anywhere, eliminating the obligation to attend in person or stick to established schedules.

This Postgraduate Certificate in Ethical Aspects of Artificial Intelligence in Clinical Research 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 Ethical Aspects of Artificial Intelligence in Clinical Research
- 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

You will apply sound ethical principles to AI in Clinical Research, contributing to fairer, more transparent and socially responsible medical advances"

You will examine aspects such as sustainability in biomedical research, future trends and developments, as well as innovation, through innovative multimedia resources.

" *You will delve into the management of informed consent and accountability in research, in the context of advanced technologies in the biomedical field"*

Thanks to this 100% online Postgraduate Certificate, you will ethically address current challenges and anticipate the evolving landscape of clinical research.

The program's teaching staff includes professionals from the sector 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, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

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Objectives

The program's main objective is to provide graduates with a deep and contextualized understanding of the ethical dilemmas that arise when integrating AI in the biomedical field. As such, the specific ethical and legal challenges associated with the application of AI in Clinical Research will be analyzed in detail, focusing on crucial issues such as the protection of patient privacy, informed consent management and equity in access to medical care. In addition, you will cultivate critical skills to evaluate and make ethical decisions in complex situations.

You will be able to merge technological innovation with an unwavering commitment to ethics and integrity in Clinical Research"

General Objective

- Delve into ethical dilemmas, review legal considerations, explore the socioeconomic impact and future of AI in healthcare, and promote innovation and entrepreneurship in the field of clinical AI

You will equip yourself with the conceptual and practical tools to address emerging ethical and legal dilemmas in the use of AI in clinical settings"

Specific Objectives

- Understand the ethical dilemmas that arise when applying AI in clinical research and review the relevant legal and regulatory considerations in the biomedical setting
- Address specific challenges in the management of informed consent in AI studies
- Investigate how AI can influence equity and access to healthcare
- Analyze future perspectives on how AI will shape Clinical Research, exploring its role in the sustainability of biomedical research practices and identifying opportunities for innovation and entrepreneurship
- Comprehensively address the ethical, legal and socioeconomic aspects of AI-driven Clinical Research

03

Course Management

The faculty members leading this program stand out for their deep multidisciplinary knowledge and practical experience in crucial areas of the Ethical Aspects of Artificial Intelligence in Clinical Research. Accordingly, these professionals are committed to the teaching of fundamental ethical principles, as well as to the specific application of these concepts in the clinical setting. In addition, their educational approach will focus on engaging graduates in the analysis of real cases and the exploration of complex ethical scenarios, providing a solid foundation for addressing ethical dilemmas in AI-driven Clinical Research.

The knowledge and experience of the faculty will enable you to gain a holistic view and comprehensive understanding of the ethical challenges inherent to AI in the medical context"

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

Mr. Popescu Radu, Daniel Vasile

- Pharmacology, Nutrition and Diet Specialist
- 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

Professors

Dr. Carrasco González, Ramón Alberto
- Specialist in Computer Science and Artificial Intelligence
- Researcher
- Head of Business Intelligence (Marketing) at the 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.
- Doctor in Artificial Intelligence by the University of Granada
- Higher Engineering Degree in Computer Science from the University of Granada

04
Structure and Content

The Postgraduate Certificate merges conceptual depth with practical applicability. As such, its structure is meticulously designed to immerse physicians in ethical dilemmas in the context of AI and Clinical Research. From the ethical foundations to the legal implications and ethical application of AI, each topic will guide graduates toward a more responsible and advanced biomedical practice. In addition, through the study of real clinical cases, professionals will inquire not only into current challenges, but also in envisioning and shaping the ethical future of Clinical Research.

" *With a balanced combination of theory and application, this program will prepare you to lead in a world where ethics and technology converge in a harmonious and visionary way"*

Module 1. Ethical, Legal and Future Aspects of Artificial Intelligence in Clinical Research

1.1.   Ethics in the Application of AI in Clinical Research

    1.1.1.   Ethical Analysis of AI-Assisted Decision Making in Clinical Research Settings

    1.1.2.   Ethics in the Use of AI Algorithms for Participant Selection in Clinical Trials

    1.1.3.   Ethical Considerations in the Interpretation of Results Generated by AI Systems in Clinical Research

1.2.   Legal and Regulatory Considerations in Biomedical AI

    1.2.1.   Analysis of Legal Regulations in the Development and Application of AI Technologies in the Biomedical Field

    1.2.2.   Assessment of Compliance with Specific Regulations to Ensure the Safety and Efficacy of AI-Based Solutions

    1.2.3.   Addressing Emerging Regulatory Challenges Associated with the Use of AI in Biomedical Research

1.3.   Informed Consent and Ethical Aspects in the Use of Clinical Data

    1.3.1.   Development of Strategies to Ensure Effective Informed Consent in AI Projects

    1.3.2.   Ethics in the Collection and Use of Sensitive Clinical Data in the Context of AI-Driven Research

    1.3.3.   Addressing Ethical Issues Related to Ownership and Access to Clinical Data in Research Projects

1.4.   AI and Liability in Clinical Research

    1.4.1.   Evaluation of Ethical and Legal Accountability in the Implementation of AI Systems in Clinical Research Protocols

    1.4.2.   Development of Strategies to Address Potential Adverse Consequences of the Application of AI in Biomedical Research

    1.4.3.   Ethical Considerations in the Active Participation of AI in Clinical Research Decision Making

1.5.   Impact of AI on Equity and Access to Health Care

    1.5.1.   Evaluation of the Impact of AI Solutions on Equity in Clinical Trial Participation

    1.5.2.   Development of Strategies to Improve Access to AI Technologies in Diverse Clinical Settings

    1.5.3.   Ethics in the Distribution of Benefits and Risks Associated with the Application of AI in Health Care

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.

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.

Certificate

The Postgraduate Certificate in Ethical Aspects of Artificial Intelligence in Clinical Research guarantees students, 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 program will allow you to obtain your **Postgraduate Certificate in Ethical Aspects of Artificial Intelligence in Clinical Research** 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** title 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 Aspects of Artificial Intelligence in Clinical Research**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**

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

Postgraduate Certificate in Ethical Aspects of Artificial Intelligence in Clinical Research

This is a program 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
Rector

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

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*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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