Postgraduate Certificate

Practical Applications of Artificial Intelligence in Clinical Research

tech global university

Postgraduate Certificate
Practical Applications 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/advanced-methods-artificial-intelligence-tools-clinical-research**

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Introduction

Practical Applications of Artificial Intelligence (AI) in Clinical Research have revolutionized the field of medicine. These tools enable faster and more accurate analysis of large medical datasets, speeding up the identification of patterns, diagnoses and disease predictions. Furthermore, in the drug development phase, AI accelerates the screening of promising compounds, reducing the costs and time required to bring new drugs to market. For this reason, TECH has created an educational syllabus that will immerse medical professionals in the innovative universe of this discipline. Relying on the revolutionary *Relearning* methodology, this 100% online educational system will focus on reiterating key concepts for optimal learning.

By integrating AI into Clinical Research, you will not only improve the efficiency and accuracy of analysis and treatments, but also offer a major breakthrough in the personalization of medical care"

The application of Artificial Intelligence (AI) in Clinical Research has proven to be an invaluable tool for advancing the understanding and treatment of disease. The ability to process large data sets efficiently enables researchers to identify patterns, correlations and risk factors with unprecedented accuracy. Likewise, AI facilitates the analysis of medical images, accelerating diagnosis and providing detailed information on disease progression.

Therefore, this Postgraduate Certificate in Practical Applications of Artificial Intelligence in Clinical Research will offer a complete immersion in the most cutting-edge technologies and their innovative applications in the field of healthcare. In this way, the program will cover various areas, from advanced biomedical image analysis to the integration of robotics in clinical laboratory environments, analyzing in detail precision medicine and enabling the personalization of therapies.

In addition, the development of AI-assisted vaccines and treatments, the applications of Artificial Intelligence in immunology and the strategic integration of wearable devices and remote monitoring systems in clinical studies will be discussed in depth. Moreover, it will provide a comprehensive and up-to-date overview of the most significant advances in the field of healthcare, driven by Artificial Intelligence, providing physicians with the tools and knowledge to address the most current challenges in Clinical Research.

Accordingly, TECH has developed a comprehensive syllabus, 100% online, based on the cutting-edge *Relearning* methodology, with the aim of teaching highly qualified experts in the application of Artificial Intelligence. This educational approach will focus on the repetition of fundamental ideas to ensure a complete understanding of the syllabus. Only an electronic device connected to the Internet will be required to access the contents at any time and in any place, thereby removing the requirement to be physically present or to adhere to specific schedules.

This **Postgraduate Certificate in Practical Applications 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 Practical Applications of Artificial Intelligence in Clinical Research

- The graphic, schematic, and practical content 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 explore new perspectives to address medical challenges and improve the quality of care and treatment of patients"

" *Thanks to this 100% online TECH program, you'll delve into precision medicine, exploring the personalization of therapies through the application of machine learning algorithms"*

You will use machine learning algorithms to contribute to predicting clinical outcomes and helping to improve the effectiveness of medical interventions.

You will delve into biomedical image analysis, examining how AI improves diagnostic accuracy and interpretation of results. Enroll now!
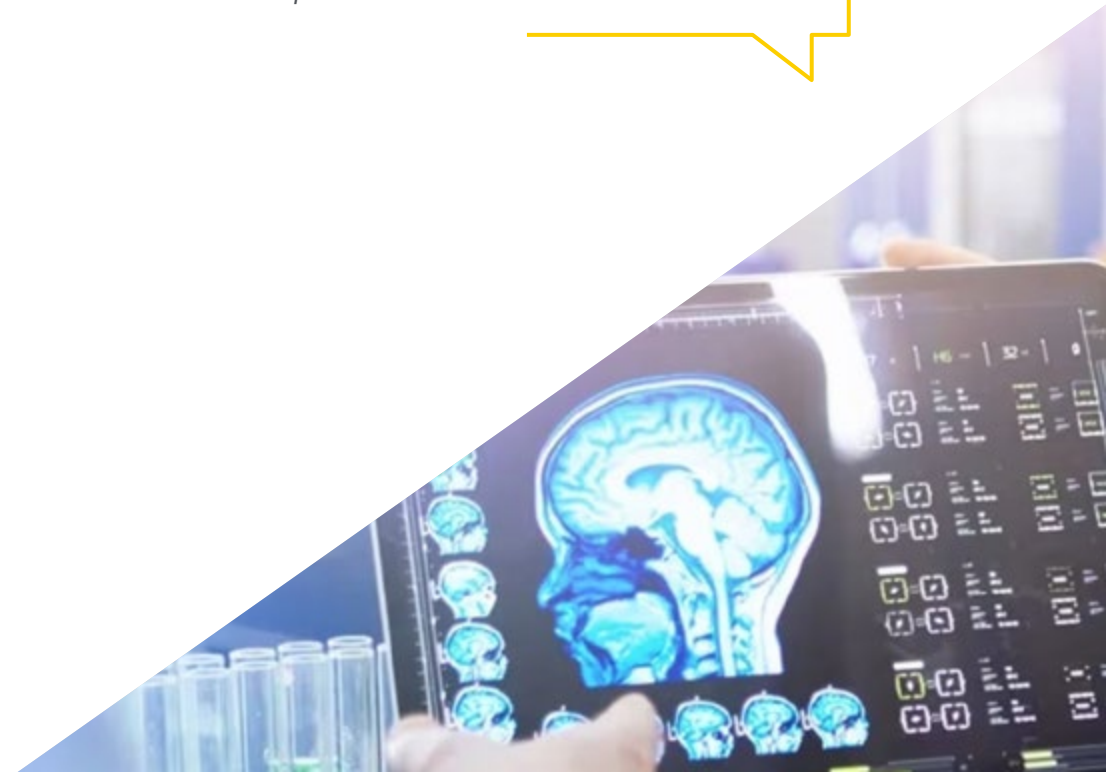
The program's teaching staff includes professionals from the sector who contribute their work experience to this program, as well as renowned specialists from leading societies and prestigious universities.

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 main objective of the Postgraduate Certificate is to provide physicians with a deep and practical understanding of how Artificial Intelligence is transforming Clinical Research. This program will look at how AI improves diagnosis, personalization of treatments and prediction of clinical outcomes, focusing on specific areas such as medical image analysis and the development of personalized therapies. As such, the program will focus on providing graduates with the necessary skills to successfully apply AI in clinical research, fostering their ability to face challenges and take advantage of emerging opportunities in a dynamic field.

You will master the latest AI technologies applied in clinical settings, enabling you to analyze and utilize complex medical data using advanced algorithms"

General Objectives

- Understand and apply genomic sequencing technologies, AI data analysis and use of AI in biomedical imaging

- Acquire expertise in key areas such as personalization of therapies, precision medicine, AI-assisted diagnostics, and clinical trial management

- Develop skills to address contemporary challenges in the biomedical field, including the efficient management of clinical trials and the application of AI in immunology

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You will delve into the important role of AI in the development of vaccines and treatments, as well as in the optimization of immunology-related processes"

Specific Objectives

- Acquire expertise in key areas such as personalization of therapies, precision medicine, AI-assisted diagnosis, clinical trial management and vaccine development
- Incorporate robotics and automation in clinical laboratories to optimize processes and improve the quality of results
- Explore the impact of AI in microbiome, microbiology, wearables and remote monitoring in clinical studies
- Address contemporary challenges in the biomedical field, such as efficient management of clinical trials, development of AI-assisted treatments, and application of AI in immunology and immune response studies
- Innovate in AI-assisted diagnostics to improve early detection and diagnostic accuracy in clinical and biomedical research settings

Course Management

The professors of the Postgraduate Certificate in Practical Applications of Artificial Intelligence in Clinical Research are highly qualified and recognized experts in their respective fields of study. These professionals have a solid educational background and vast experience in the application of Artificial Intelligence in clinical settings. Their expertise covers various specialized areas such as biomedical image analysis, robotics in the clinical setting, precision medicine, vaccine development and AI-assisted treatments. These faculty members possess exceptional pedagogical skills to effectively and comprehensibly convey this complex knowledge to graduates.

The faculty's extensive experience in Clinical Research will provide the physician with an applied view of AI in this area, enriching the educational experience with real clinical cases"

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

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Structure and Content

This educational program will address biomedical image analysis, examining how AI improves the interpretation and diagnosis of complex medical images. In addition, robotics in clinical laboratories will be explored, exploring how advanced automation optimizes research processes. It will also delve into precision medicine, detailing how AI personalizes therapies and treatments based on individual data. Finally, specific applications in vaccine development, AI-assisted immunological analysis and the integration of wearable devices for remote monitoring in clinical studies will be discussed.

You will delve into a comprehensive approach, which will provide you with a detailed understanding of how AI transforms Clinical Research and improves healthcare"

Module 1. Practical Applications of Artificial Intelligence in Clinical Research

1.1.   Genomic Sequencing Technologies and Data Analysis with Artificial Intelligence

    1.1.1.   Use of AI for Rapid and Accurate Analysis of Genetic Sequences

    1.1.2.   Implementation of Machine Learning Algorithms in the Interpretation of Genomic Data

    1.1.3.   AI Tools for Identification of Genetic Variants and Mutations

    1.1.4.   Development of AI Systems for Anomaly Detection in Medical Images

1.2.   AI in the Analysis of Biomedical Images

    1.2.1.   Development of AI Systems for the Detection of Anomalies in Medical Images

    1.2.2.   Use of Deep Learning in the Interpretation of X-rays, MRI and CT Scans

    1.2.3.   AI Tools to Improve Accuracy in Diagnostic Imaging

    1.2.4.   Implementation of AI in Biomedical Image Classification and Segmentation

1.3.   Robotics and Automation in Clinical Laboratories

    1.3.1.   Use of Robots for the Automation of Tests and Processes in Laboratories

    1.3.2.   Implementation of Automatic Systems for the Management of Biological Samples

    1.3.3.   Development of Robotic Technologies to Improve Efficiency and Accuracy in Clinical Analysis

    1.3.4.   AI Application in Optimization of Workflows in Laboratory

1.4.   AI in the Personalization of Therapies and Precision Medicine

    1.4.1.   Development of AI Models for the Personalization of Medical Treatments

    1.4.2.   Use of Predictive Algorithms in the Selection of Therapies based on Genetic Profiling

    1.4.3.   AI Tools in the Adaptation of Drug Doses and Combinations

    1.4.4.   Application of AI in the Identification of Effective Treatments for Specific Groups

1.5.   Innovations in AI-Assisted Diagnostics

    1.5.1.   Implementation of AI Systems for Rapid and Accurate Diagnostics

    1.5.2.   Use of AI in Early Identification of Diseases through Data Analysis

    1.5.3.   Development of AI Tools for Clinical Test Interpretation

    1.5.4.   Application of AI in Combining Clinical and Biomedical Data for Comprehensive Diagnostics

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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.

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Certificate

The Postgraduate Certificate in Practical Applications 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 Practical Applications 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 Practical Applications 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 Practical Applications 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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