Postgraduate Diploma

Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine

tech global university

Postgraduate Diploma
Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine

- » Modality: **online**
- » Duration: **6 months**
- » Certificate: **TECH Global University**
- » Credits: **18 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-applications-artificial-intelligence-lot-medical-devices-telemedicine**

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Introduction

Telemedicine is booming due to the technological revolution, which has made it possible to create portable devices and other instruments for remote patient monitoring. This connectivity, even in real time, allows medical professionals to offer quality and specialized healthcare. These advances, which are already a reality, have an even more fruitful future. That is why TECH wanted to provide with this 100% online program the most advanced content on Artificial Intelligence and the Internet of Things (IoT) applied to the field of health. All this through a quality multimedia content developed by experts in Biomedicine and R+D+i, which will allow the graduate to update their knowledge in just 6 months.
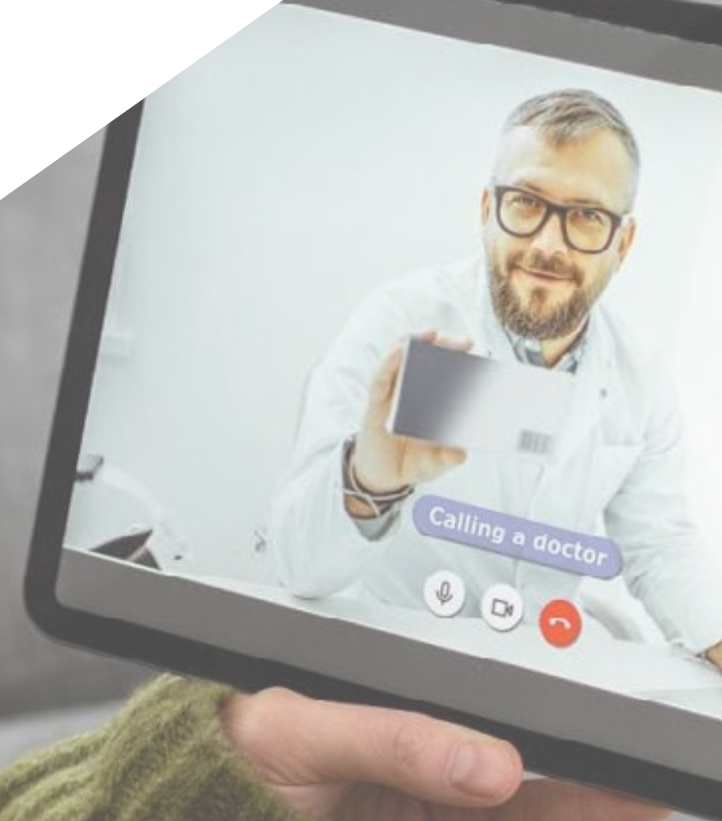
A 100% online modality that will adapt to your personal and professional possibilities with the support of a teaching team that will guarantee your education"

Nowadays, it is very common to find patients with diabetes who have a device that delivers insulin based on their blood sugar levels. Moreover, these results can be consulted in real time by the healthcare professional and the best decision can be taken quickly according to the person's state of health. What until a few years ago was just an idea is now a reality that is advancing at an accelerated pace thanks to the advance of new technologies.

Therefore, the field of Artificial Intelligence, closely associated with leisure sectors, has been able to develop effectively in the healthcare field and promote Telemedicine. A progress that will make it possible to prevent diseases and make diagnoses with higher-quality images. A scenario that, a priori, may seem futuristic, but is today the present of healthcare. Faced with this undeniable reality, TECH has created this Postgraduate Diploma in Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine. In just 6 months, this program provides a complete update on health and technology.

For this, this academic institution has specialized professionals who have transferred their advanced knowledge to the syllabus of this program. Therefore, through multimedia didactic material, the graduate will learn more about the new diagnostic, surgical and biomechanical devices and the *Cloud* technologies available for the development of e-Health products.

In addition, the case studies will provide the specialist with a much closer look at the applications of the Internet of Things (IoT) and Telemedicine. In this way, they will be able to keep up-to-date with the instruments and techniques used and introduce them into their daily practice.

A 100% online Postgraduate Diploma, which invites the medical professional to delve into this innovative field through a syllabus that will be at your disposal wherever and whenever you need it. Students only required a computer, *Tablet* or cell phone with an Internet connection to access the content hosted on the Virtual Campus. An ideal flexibility for those who wish to combine work responsibilities with a state-of-the-art academic program.

This **Postgraduate Diploma in Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine** 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 and Medical Devices in Telemedicine
* The graphic, schematic, and practical contents with which they are created, provide 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

With this program you will be up-to-date with the monitoring of patients with cardiac problems, diabetes and asthma through new devices based on Artificial Intelligence"

"*You will have access to a library of multimedia resources with which you will be able to comfortably access, whenever you wish, to the most advanced topics in AI applied to Telemedicine*"

Thanks to this program you will be up to date with the most common regulatory frameworks for the use of Telemedicine.

This Postgraduate Diploma will lead you to investigate the latest technological devices used in diagnostics and surgery.

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

Its 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 an immersive education programmed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.

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Objectives

Over the course of this program, the medical professional will obtain a complete update of their knowledge on new solutions in computer applications and telehealth. In addition, from a practical approach, they will be able to delve into the trends of e-Health based businesses and the possibilities of development in the present. For this purpose, this institution provides simulations of case studies, which will bring the specialist closer to the main methods used for the integration of new technologies in the healthcare field.

"

This Postgraduate Diploma gives you a practical view of AI through case studies provided by specialists in this area"

General Objectives

- Develop key concepts of Medicine that serve as a vehicle to understand clinical medicine

- Determine the major diseases affecting the human body classified by apparatus or systems, structuring each module into a clear outline of pathophysiology, diagnosis, and treatment

- Determine how to obtain metrics and tools for healthcare management

- Understand the basics of basic and translational scientific methodology

- Examine the ethical and best practice principles governing the different types of research in health sciences

- Identify and generate the means of funding, assessing and disseminating scientific research

- Identify the real clinical applications of the various techniques

- Develop the key concepts of computational science and theory

- Determine the applications of computation and its implication in bioinformatics

- Provide the necessary resources to practically apply all the concepts in the modules

- Develop the fundamental concepts of databases

- Determine the importance of medical databases

- Delve into the most important techniques in research

- Identify the opportunities offered by the IoT in the field of e-Health

- Provide specialized knowledge of the technologies and methodologies used in the design, development and assessment of telemedicine systems

- Determine the different types and applications of Telemedicine

- Delve into the most common ethical aspects and regulatory frameworks of Telemedicine

- Analyze the use of Medical Devices

- Develop the key concepts of entrepreneurship and innovation in eHealth

- Determine what a business model is and the types that exist

- Collect e-Health success stories and mistakes to avoid

- Apply the knowledge acquired to an original business idea

Specific Objectives

Module 1. Applications of Artificial Intelligence and the Internet of Things (IoT) in Telemedicine

- Propose communication protocols in different scenarios in the healthcare field
- Analyze IoT communication, as well as its application areas in e-Health
- Substantiate the complexity of Artificial Intelligence models in healthcare applications
- Identify the optimization brought by parallelization in GPU-accelerated applications and its use in healthcare
- Present all the *Cloud* technologies available to implement e-Health and the IoT products, both in computing and communication

Module 2. Telemedicine and Medical, Surgical and Biomechanical Devices

- Analyze the evolution of Telemedicine
- Assess the benefits and limitations of Telemedicine
- Examine the different types, use and clinical benefits of Telemedicine
- Assess the most common ethical issues and regulatory frameworks surrounding Telemedicine
- Establish the use of Medical Devices in healthcare in general and in Telemedicine specifically
- Determine the use of the Internet and the medical resources it provides
- Delve into the main trends and future challenges in Telemedicine

Module 3. Business Innovation and Entrepreneurship in E-Health

- Analyze the e-Health market in a systematic and structured way
- Learn the key concepts of innovative ecosystems
- Create businesses using the Lean Startup methodology
- Analyze the market and competitors
- Find a solid value proposition in the marketplace
- Identify opportunities and minimize rates of error
- Handle practical tools to analyze the environment and to quickly test and validate business ideas

This Postgraduate Diploma will allow you to learn about the Lean Startup methodology for the creation of e-Health business"

Course Management

In order to maintain its commitment to offer all professionals a quality program, TECH has selected for this Postgraduate Diploma a specialized teaching staff with experience in Biomedicine and innovation in health and corporate well-being. This is a guarantee for the specialist who wishes to obtain, through this program, the latest information on the use of new technologies in the health field. In addition, this institution has taken into account the proximity of the teaching staff, which will allow the graduate to resolve any doubts that may arise about the syllabus.

A team specialized in Biomedicine and corporate well-being will take you to know the latest advances in Telemedicine"

Management

Ms. Sirera Pérez, Ángela

- Biomedical Engineer expert in Nuclear Medicine and exoskeleton design
- Designer of specific parts for 3D printing at Technadi
- Technician in the Nuclear Medicine area of the University Clinic of Navarra
- Degree in Biomedical Engineering from the University of Navarra
- MBA and Leadership in Healthcare and Medical Technology Companies

Professors

Ms. Muñoz Gutiérrez, Rebeca

- Data Scientist at INDITEX
- Firmware Engineer for Clue Technologies
- Graduate in Health Engineering with mention in Biomedical Engineering from the
- University of Malaga and the University of Seville
- Master's Degree in Intelligent Avionics, Clue Technologies, in collaboration with the University of Málaga
- NVIDIA: Fundamentals of Accelerated Computing with CUDA C/C++
- NVIDIA: Accelerating CUDA C++ Applications with Multiple GPUs

Dr. Somolinos Simón, Francisco Javier

- Biomedical Engineering Researcher at the Bioengineering and Telemedicine Group of the Polytechnic University of Madrid
- R&D&I Consultant at Evalue Innovation
- Biomedical Engineering Researcher at the Bioengineering and Telemedicine Group of the Polytechnic University of Madrid
- D. in Biomedical Engineering from the Polytechnic University of Madrid
- Graduate in Biomedical Engineering from the Polytechnic University of Madrid
- Master's Degree in Management and Development of Biomedical Technologies from Carlos III University of Madrid

Ms. Crespo Ruiz, Carmen

- Intelligence, Strategy and Privacy Analysis Specialist
- Director of Strategy and Privacy at Freedom&Flow SL
- Co-founder of Healthy Pills SL
- Innovation Consultant & Project Technician. CEEI CIUDAD REAL
- Co-founder of Thinking Makers
- Data protection consultancy and training. Tangente Cooperative Group
- University Lecturer
- Law Degree, UNED (National University for Distance Education)
- Degree in Journalism, University Pontificia of Salamanca
- Master's Degree in Intelligence Analysis, Carlos III and Rey Juan Carlos Universities, with the endorsement of the National Intelligence Center-CNI)
- Advanced Executive Program on Data Protection Officer

A unique, key, and decisive educational experience to boost your professional development"

04
Structure and Content

The effectiveness of multimedia resources in updating knowledge in a dynamic and attractive way has led TECH to incorporate them in all its programs. In this way, the professional will delve into the latest applications of Artificial Intelligence in Medicine, the use of the Internet of Things (IoT) and entrepreneurship in e-Health. In addition, they will advance naturally through the key concepts thanks to the *Relearning* methodology, which will even reduce the long hours of study and memorization.

An advanced syllabus that will bring you up-to-date with new solutions in computer applications in the healthcare field"

Module 1. Applications of Artificial Intelligence and the Internet of Things (IoT) in Telemedicine

1.1.   E-Health Platform. Personalizing Healthcare Services

1.1.1.   e-Health Platforms:

1.1.2.   Resources for e-Health Platforms

1.1.3.   Digital Europe Program. Digital Europe-4-Health and Horizon Europe

1.2.   Artificial Intelligence in Healthcare I: New Solutions in Computer Applications

1.2.1.   Remote Analysis of Results

1.2.2.   Chatbox

1.2.3.   Prevention and Real-Time Monitoring

1.2.4.   Preventive and Personalized Medicine in Oncology

1.3.   Artificial Intelligence in Healthcare II:

1.3.1.   Monitoring Patients with Reduced Mobility

1.3.2.   Cardiac Monitoring, Diabetes, and Asthma

1.3.3.   Health and Wellness Apps

1.3.3.1. Heart Rate Monitors

1.3.3.2. Blood Pressure Bracelets

1.3.4.   Ethical Use of AI in the Medical Field. Data Protection

1.4.   Artificial Intelligence Algorithms for Image Processing

1.4.1.   Artificial Intelligence Algorithms for Image Handling

1.4.2.   Image Diagnosis and Monitoring in Telemedicine

1.4.2.1. Melanoma Diagnosis

1.4.3.   Limitations and Challenges in Image Processing in Telemedicine

1.5.   Application Acceleration using Graphics Processing Units (GPU) in Medicine

1.5.1.   Program Parallelization

1.5.2.   GPU Operations

1.5.3.   Application Acceleration using GPU in Medicine

1.6.   Natural Language Processing (NLP) in Telemedicine

1.6.1.   Text Processing in the Medical Field. Methodology

1.6.2.   Natural Language Processing in Therapy and Medical Records

1.6.3.   Limitations and Challenges in Natural Language Processing in Telemedicine

1.7.   The Internet of Things (IoT) in Telemedicine. Applications

1.7.1.   Monitoring Vital Signs. Wearables

1.7.1.1. Blood Pressure, Temperature and Heart Rate

1.7.2.   The IT and Cloud Technology

1.7.2.1. Data Transmission to the Cloud

1.7.3.   Self-Service Terminals

1.8.   The IT in Patient Monitoring and Care

1.8.1.   The IT Applications for Emergency Detection

1.8.2.   The Internet of Things in Patient Rehabilitation

1.8.3.   Artificial Intelligence Support in Victim Recognition and Rescue

1.9.   Nanorobots. Typology

1.9.1.   Nanotechnology

1.9.2.   Types of Nanorobots

1.9.2.1. Assemblers. Applications

1.9.2.2. Self-Replicators. Applications

1.10.   Artificial Intelligence in COVID-19 Control

1.10.1.   COVID-19 and Telemedicine

1.10.2.   Management and Communication of Breakthroughs and Outbreaks

1.10.3.   Outbreak Prediction in Artificial Intelligence

Module 2. Telemedicine and Medical, Surgical and Biomechanical Devices

2.1.   Telemedicine and Telehealth

2.1.1.   Telemedicine as a Telehealth Service

2.1.2.   Telemedicine

2.1.2.1. Telemedicine Objectives

2.1.2.2. Benefits and Limitations of Telemedicine

2.1.3.   Digital Health. Technologies

2.2.   Telemedicine Systems

2.2.1.   Components in Telemedicine Systems

2.2.1.1. Personal

2.2.1.2. Technology

Module 3. Business Innovation and Entrepreneurship in E-Health

In this program you will learn about the ethical challenges involved in the use of Artificial Intelligence in the medical field"

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 years old age of 43.5.

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 Diploma in Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma 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 Diploma in Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine** 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 Diploma in Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**

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tech global university

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

Postgraduate Diploma in Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine

This is a program of 450 hours of duration equivalent to 18 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 additvional cost.

![tech global university logo]

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