



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

» Modality: online

» Duration: 6 months

» Certificate: TECH Technological University

» Dedication: 16h/week

» Schedule: at your own pace

» Exams: online

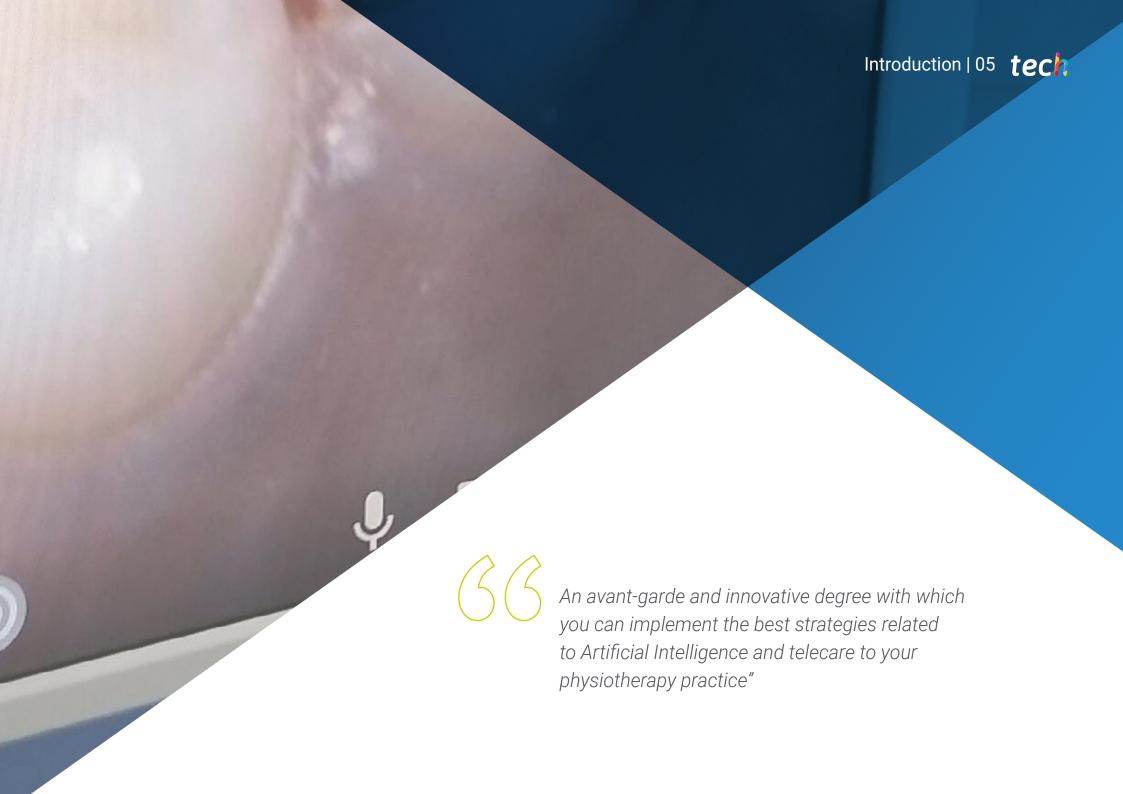
Website: www.techtitute.com/us/physiotherapy/postgraduate-diploma/postgraduate-diploma-applications-artificial-intelligence-iot-medical-devices-telemedicine

Index

> 06 Certificate

> > p. 30





tech 06 | Introduction

Artificial Intelligence has undoubtedly become a widely advantageous technology for the clinical sector. The multiple benefits that have been obtained from its development have allowed millions of specialists around the world to optimize their diagnostic and treatment strategies, reducing waiting times and guaranteeing more effective and personalized care. In the case of Physiotherapy, strategies such as non-invasive neuromodulation (widely used in diseases such as fibromyalgia, for example) or digital rehabilitation through applications that analyze the position and range of movement of the person, have considerably favored the recovery of their physical conditions and, therefore, their well-being and their quality of life.

Based on the results that have been obtained to date, more and more specialists wish to implement these technologies and therapeutic guidelines in their consultations, in order not only to adapt their service to future strategies, but also to to be able to offer their patients more and better alternatives. That is why this University Expert becomes a guide through which the graduate can get up to date on the news in this sector, also focusing on how the Internet of Things (IoT) and artificial intelligence have favored the development of increasingly effective and efficient medical, surgical and biomechanical devices. Finally, the specialist will delve into the keys to transform your clinic into the center of the future through knowledge of the best innovation techniques business for E-Health.

For this, students will have 450 hours of diverse content, which not only includes the agenda, designed by experts in Bioinformatics and Biomedical Engineering, but also real clinical cases and a multitude of audiovisual material. All this presented in a comfortable 100% online format accessible from any device with an internet connection. In this way, the physiotherapist will be able to invest his time in updating himself on the trends that will lead the future of his profession while continuing with his activity in the practice.

This Postgraduate Diploma in Applications of Artificial Intelligence, IoT, 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 self-assessment can be used to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions for 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 run a clinic and would like to get up to date on business innovation strategies in E-Health? Enroll in this Postgraduate Diploma and transform it into the clinical center of the future"



A program designed by experts in Artificial Intelligence and IoT, with which, in less than 6 months, you will be able to update your knowledge of the most cutting-edge Telemedicine systems"

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

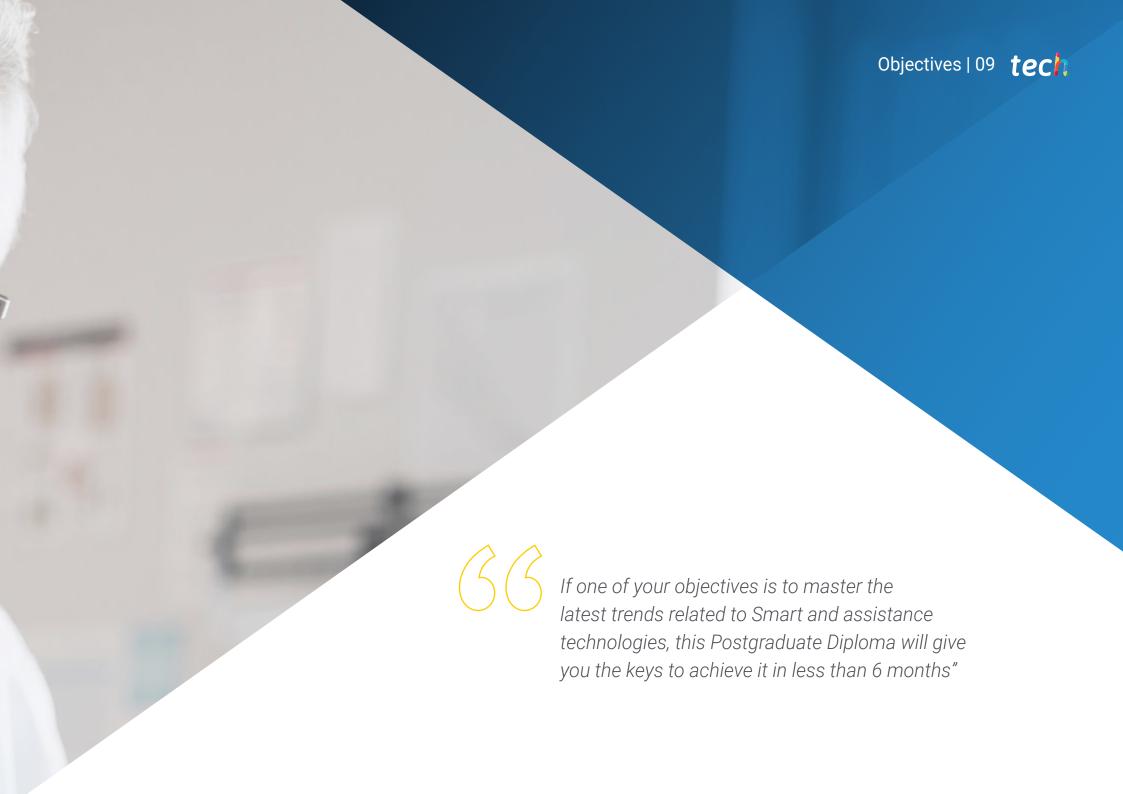
Its multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide an immersive education designed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve different professional practice situations that are presented throughout the academic course. This will be done with the help of an innovative system of interactive videos made by renowned experts.

In the Virtual Campus you will have access to 450 hours of diverse material, from the syllabus to real clinical cases and varied audiovisual content to delve into each module in a personalized way.

Knowing in detail the most avant-garde monitoring techniques and their ethical challenges will allow you to apply Artificial Intelligence always in relation to the best for the patient.





tech 10 | Objectives



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 e-Health
- Determine what a business model is and the types that exist
- Collect e-Health success stories and mistakes to avoid
- Apply the knowledge gained to your own business idea



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 its use in healthcare
- 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
- Be able to handle practical environmental analysis tools and practical tools to quickly test and validate your ideaHandle practical tools to analyze the environment and to quickly test and validate business ideas



You decide when and from where to connect. Without corseted classes or predefined schedules, so you can design the academic calendar in a 100% personalized way"



tech 14 | Course Management

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, specializing in Biomedical Engineering, University of Malaga and 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



Course Management | 15 tech

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



Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice" 04

Structure and Content

Both the design of the structure and the content of this Postgraduate Diploma have been carried out by the teaching team, which, in addition to selecting the most innovative and exhaustive information, have designed the best and most varied additional material. All this following the strict quality guidelines that define TECH. In this way, graduates who accesses the program will be able to update themselves, on the news of E-Health in a dynamic and multidisciplinary way, but, above all, guaranteed, through a 100% online experience.





tech 18 | Structure and Content

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

- 1.1. E-Health Platforms. Personalizing Healthcare Services
 - 1.1.1. E-Health Platform
 - 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, 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 Al 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. Nano-Robots. Typology
 - 1.9.1. Nanotechnology
 - 1.9.2. Types of Nano-Robots
 - 1.9.2.1. Assemblers. Applications
 - 1.9.2.2. Self-Replicating. 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. to 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



Structure and Content | 19 tech

- 2.2.2. Information and Communication Technologies (ICT) in the Health Sector
 - 2.2.2.1. T-Health
 - 2.2.2.2. M-Health
 - 2.2.2.3. U-Health
 - 2.2.2.4. P-Health
- 2.2.3. Telemedicine Systems Assessment
- 2.3. Technology Infrastructure in Telemedicine
 - 2.3.1. Public Switched Telephone Network (PSTN)
 - 2.3.2. Satellite Networks
 - 2.3.3. Integrated Services Digital Network (ISDN)
 - 2.3.4. Wireless Technology2.3.4.1. WAP. Wireless Application Protocol2.3.4.2. Bluetooth
 - 2.3.5. Microwave Connections
 - 2.3.6. Asynchronous Transfer Mode (ATM)
- 2.4. Types of Telemedicine. Uses in Healthcare
 - 2.4.1. Remote Patient Monitoring
 - 2.4.2. Storage and Shipping Technologies
 - 2.4.3. Interactive Telemedicine
- 2.5. Telemedicine: General Applications
 - 2.5.1. Telecare
 - 2.5.2. Telemonitoring
 - 2.5.3. Telediagnostics
 - 2.5.4. Teleeducation
 - 2.5.5. Telemanagement
- 2.6. Telemedicine: Clinical Applications
 - 2.6.1. Teleradiology
 - 2.6.2. Teledermatology
 - 2.6.3. Teleoncology
 - 2.6.4. Telepsychiatry
 - 2.6.5. Telehome-care

tech 20 | Structure and Content

- 2.7. Smart Technologies and Care
 - 2.7.1. Integrating Smart Homes
 - 2.7.2. Digital Health to Improve Treatment
 - 2.7.3. Telehealth Clothing Technology. "Smart Clothes"
- 2.8. Ethical and Legal Aspects of Telemedicine
 - 2.8.1. Ethical Foundations
 - 2.8.2. Common Regulatory Frameworks
 - 2.8.4. ISO Standards
- 2.9. Telemedicine and Diagnostic, Surgical and Biomechanical Devices
 - 2.9.1. Diagnostic Devices
 - 2.9.2. Surgical Devices
 - 2.9.2. Biomechanic Devices
- 2.10. Telemedicine and Medical Devices
 - 2.10.1. Medical Devices
 - 2.10.1.1. Mobile Medical Devices
 - 2.10.1.2. Telemedicine Carts
 - 2.10.1.3. Telemedicine Kiosks
 - 2.10.1.4. Digital Cameras
 - 2.10.1.5. Telemedicine Kit
 - 2.10.1.6. Telemedicine Software

Module 3. Business Innovation and Entrepreneurship in E-Health

- 3.1. Entrepreneurship and Innovation
 - 3.1.1. Innovation
 - 3.1.2. Entrepreneurship
 - 3.1.3. Startups
- 3.2. Entrepreneurship in E-Health
 - 3.2.1. Innovative E-Health Market
 - 3.2.2. Verticals in E-Health: M-Health
 - 3.2.3. TeleHealth



Structure and Content | 21 tech

- 3.3. Business Models (I): First Stages in Entrepreneurship
 - 3.3.1. Types of Business Models
 - 3.3.1.1. Marketplaces
 - 3.3.1.2. Digital Platforms
 - 3.3.1.3. Saas
 - 3.3.2. Critical Elements in the Initial Phase. The Business Idea
 - 3.3.3. Common Mistakes in the First Stages of Entrepreneurship
- 3.4. Business Models (II): Business Model Canvas
 - 3.4.1. Canvas Business Model
 - 3.4.2. Value proposition
 - 3.4.3. Key Activities and Resources
 - 3.4.4. Customer Segments
 - 3.4.5. Customer Relationships
 - 3.4.6. Distribution Channels
 - 3.4.7. Partnerships
 - 3.4.7.1. Cost Structure and Revenue Streams
- 3.5. Business Models (III): Lean Startup Methodology
 - 3.5.1. Create
 - 3.5.2. Validate
 - 3.5.3. Measure
 - 3.5.4. Decide
- 3.6. Business Models (IV): External, Strategic and Regulatory Analysis
 - 3.6.1. Red Ocean and Blue Ocean Strategies
 - 3.6.2. Value Curves
 - 3.6.3. Applicable E-Health Regulations
- 3.7. Successful E-Health Models (I): Knowing Before Innovating
 - 3.7.1. Analysis of Successful E-Health Companies
 - 3.7.2. Analysis of Company X
 - 3.7.3. Analysis of Company Y
 - 3.7.4. Analysis of Company Z

- 3.8. Successful E-Health Models (II): Listening before Innovating
 - 3.8.1. Practical Interview: E-Health Startup CEO
 - 3.8.2. Practical Interview: "Sector X" Startup CEO
 - 3.8.3. Practical Interview: "Startup X" Technical Management
- 3.9. Entrepreneurial Environment and Funding
 - 3.9.1. Entrepreneur Ecosystems in the Health Sector
 - 3.9.2. Financing
 - 3.9.3. Funding
- 3.10. Practical Tools in Entrepreneurship and Innovation
 - 3.10.1. Open-Source Intelligence (OSINT)
 - 3.10.2. Analysis
 - 3.10.3. No-Code Tools in Entrepreneurship

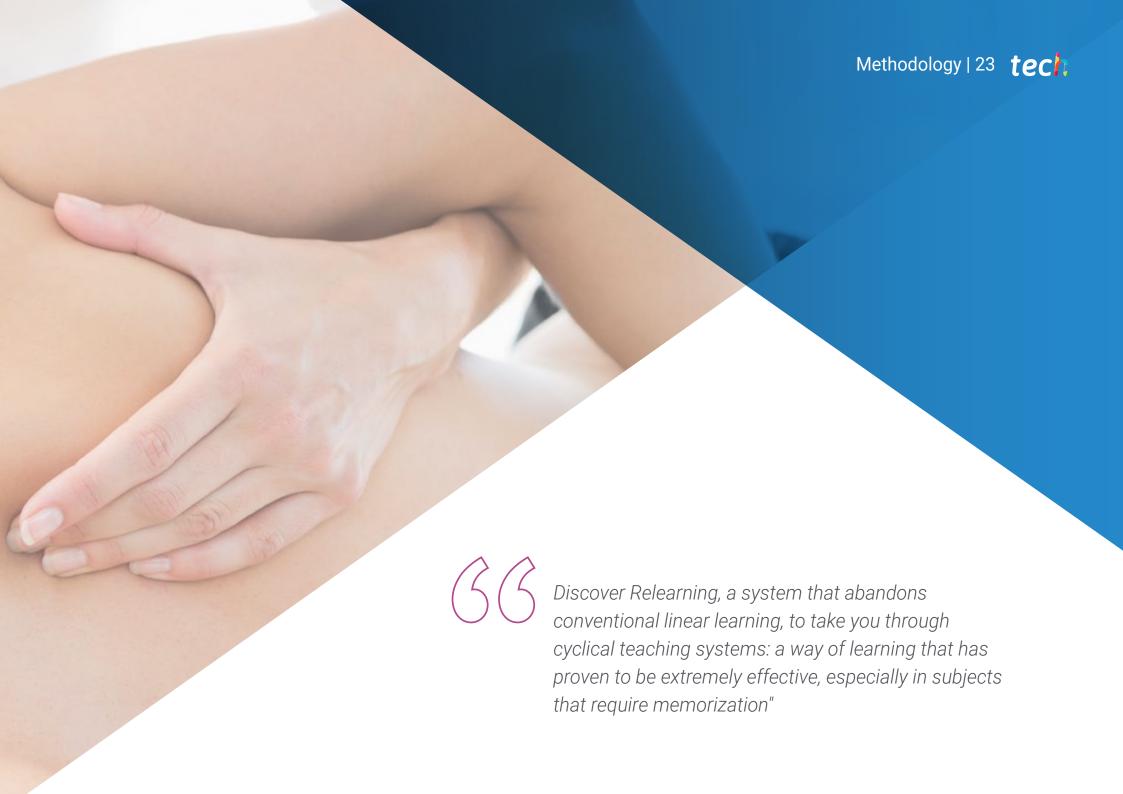


Do not think about it anymore and bet on a program that allows you to implement the best diagnostic and treatment strategies with which you will succeed in your professional field in your physiotherapy practice"



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.

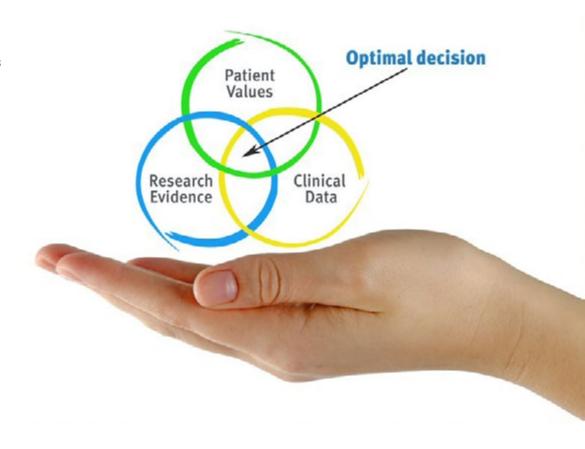


tech 24 | Methodology

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. Physiotherapists/kinesiologists 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 of professional physiotherapy 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. Physiotherapists/kinesiologists who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
- 2. The learning process has a clear focus on practical skills that allow the physiotherapist/kinesiologist 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.





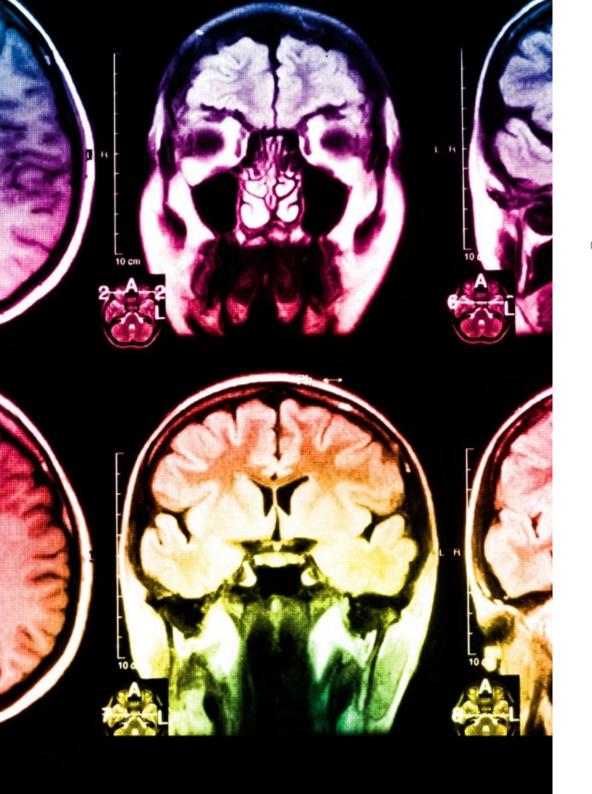
Relearning Methodology

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.

The physiotherapist/kinesiologist will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.





Methodology | 27 tech

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 we trained more than 65,000 physiotherapists/kinesiologists with unprecedented success in all clinical specialties, regardless of the workload. 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 training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for 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 our 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 really 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.



Physiotherapy Techniques and Procedures on Video

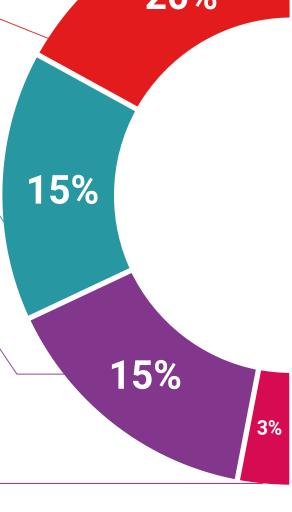
TECH brings students closer to the latest techniques, the latest educational advances and to the forefront of current Physiotherapy techniques and procedures. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch them as many times as you want.



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 unique multimedia content presentation training system 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.



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.

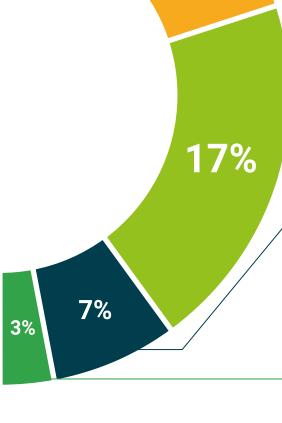
The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



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.





20%





tech 32 | Certificate

This Postgraduate Diploma in Applications of Artificial Intelligence, IoT, Medical Devices in Telemedicine contains the most complete and up-to-date scientific program on the market.

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

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

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

Official No of hours: 450 h.



^{*}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.

health confidence people information tutors guarantee as resinction teaching teaching teaching teaching teaching



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

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

