# Postgraduate Certificate
## Artificial Intelligence and IoT Applications in Telemedicine

tech *technological university*

## Postgraduate Certificate
### Artificial Intelligence and IoT Applications in Telemedicine

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

Website: **www.techtitute.com/pk/information-technology/postgraduate-certificate/artificial-intelligence-iot-applications-telemedicine**

# Index

## 01
# Introduction

The integration of Artificial Intelligence and the Internet of Things (IoT) in Telemedicine plays a great role in the efficiency of health care systems, reducing the time needed to perform diagnoses and treatments. For this reason, it is essential that computer scientists are updated every day in the latest advances in this area to lead its implementation with confidence. And they will be able to do so through this program, which delves into the latest generation of Precision Medicine. With it, they will investigate all aspects of the personalization of the health service and the resources required, always from home and with great experts at their disposal.
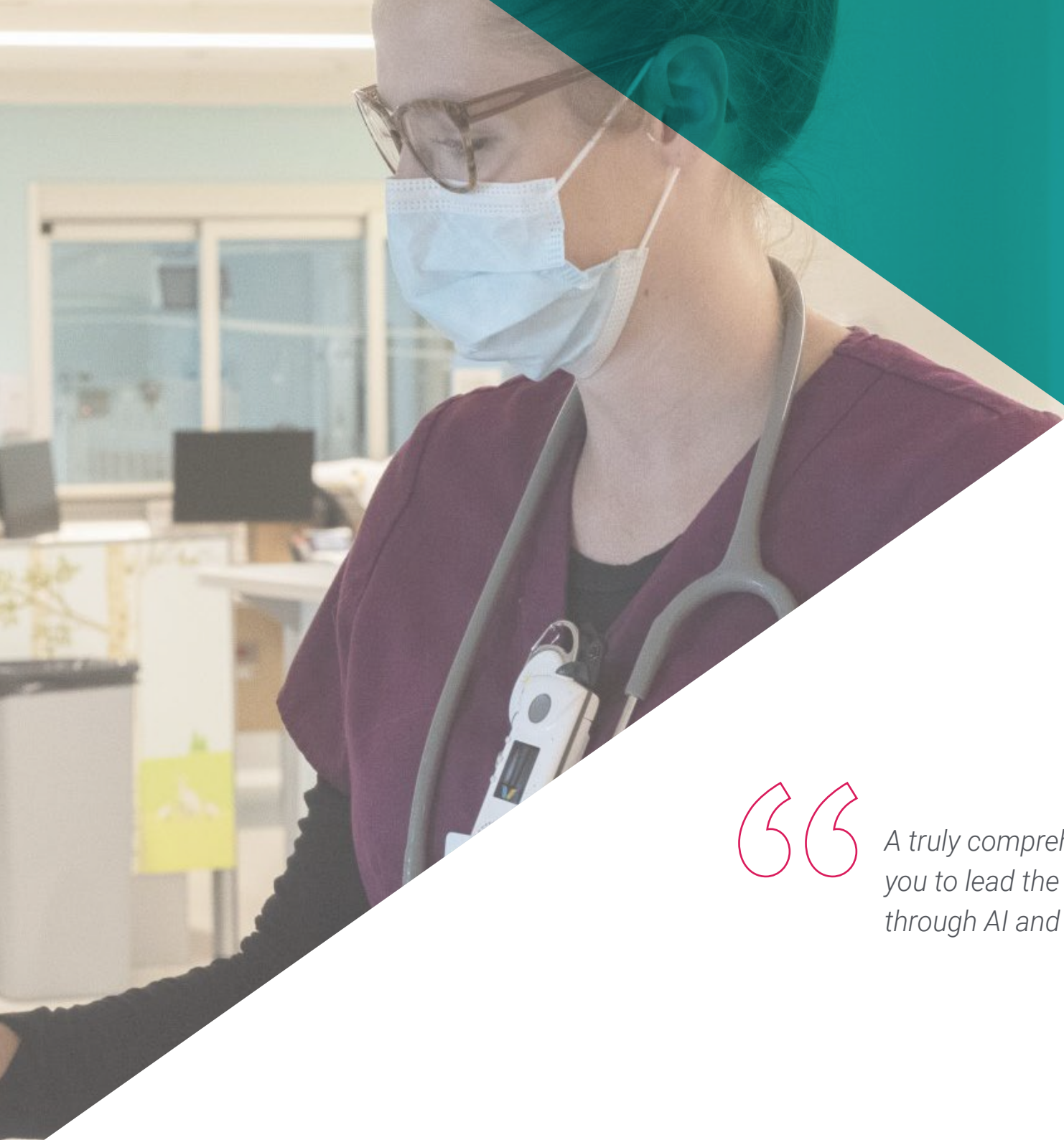
*A truly comprehensive specialization for you to lead the revolution in Telemedicine through AI and IoT"*

IoT technology enables real-time remote monitoring of patients, which is tremendously useful for individuals with chronic illnesses or those in recovery. Therefore, IoT devices can collect and transmit important health data, such as blood pressure, heart rate and blood glucose, to doctors and other health care professionals. Similarly, AI helps to improve accuracy in the diagnosis and treatment of pathologies by analyzing large amounts of patient data, detecting patterns and relationships that might not be obvious.

These are two important technologies that are having a major impact on Telemedicine, which is why computer scientists are called upon to play a major role. That is why they have a unique opportunity with this Postgraduate Certificate, with which they will examine the design of communication protocols in different scenarios in the health field. But this program takes on very comprehensive dyes, since students will analyze IoT communication beyond its application in the e-Health sector.

Additionally, during the program, students will determine the optimization provided by parallelization in GPU-accelerated applications, with an emphasis on application strategies for the health care sector.

All this and more will boost the professional career of the computer scientist through a Virtual Campus with the largest digital library of academic materials in this area. In this sense, with just an Internet connection you will be able to access them in an unlimited way 24 hours a day.

This **Postgraduate Certificate in Artificial Intelligence and IoT Applications in Telemedicine** contains the most complete and updated educational program in the market. It's most outstanding features are:

- The development of practical cases presented by experts in applications of Artificial Intelligence and IoT to Telemedicine

- The graphic, schematic and eminently practical contents with which it is conceived, collect technological and practical information on those disciplines that are essential for professional practice

- The practical exercises where the self-evaluation 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

*If you want to program algorithms for the treatment and processing of medical images, this is the program for you"*

*You will master all the implications of Natural Language Processing in Telemedicine"*

*You are 150 hours away from leading IoT implementation plans in patient monitoring and care.*

*This Postgraduate Certificate will allow you to update on the latest advances in Nanotechnology, analyzing the types of nanorobots that have been emerging.*

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

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive training programmed to train in real situations.

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

# Objectives

The main objective of the Postgraduate Certificate is none other than to promote the student's employability in the field of e-Health and Big Data thanks to an expert mastery of the latest AI and IoT tools. In this way, he will be able to implement them in the health care field to boost Telemedicine, consequently obtaining a valuable differentiation and competitive advantage that will position him in front of other computer scientists. In this sense, the innovative educational technologies that TECH puts at your disposal in the Virtual Campus will clearly play in your favor.
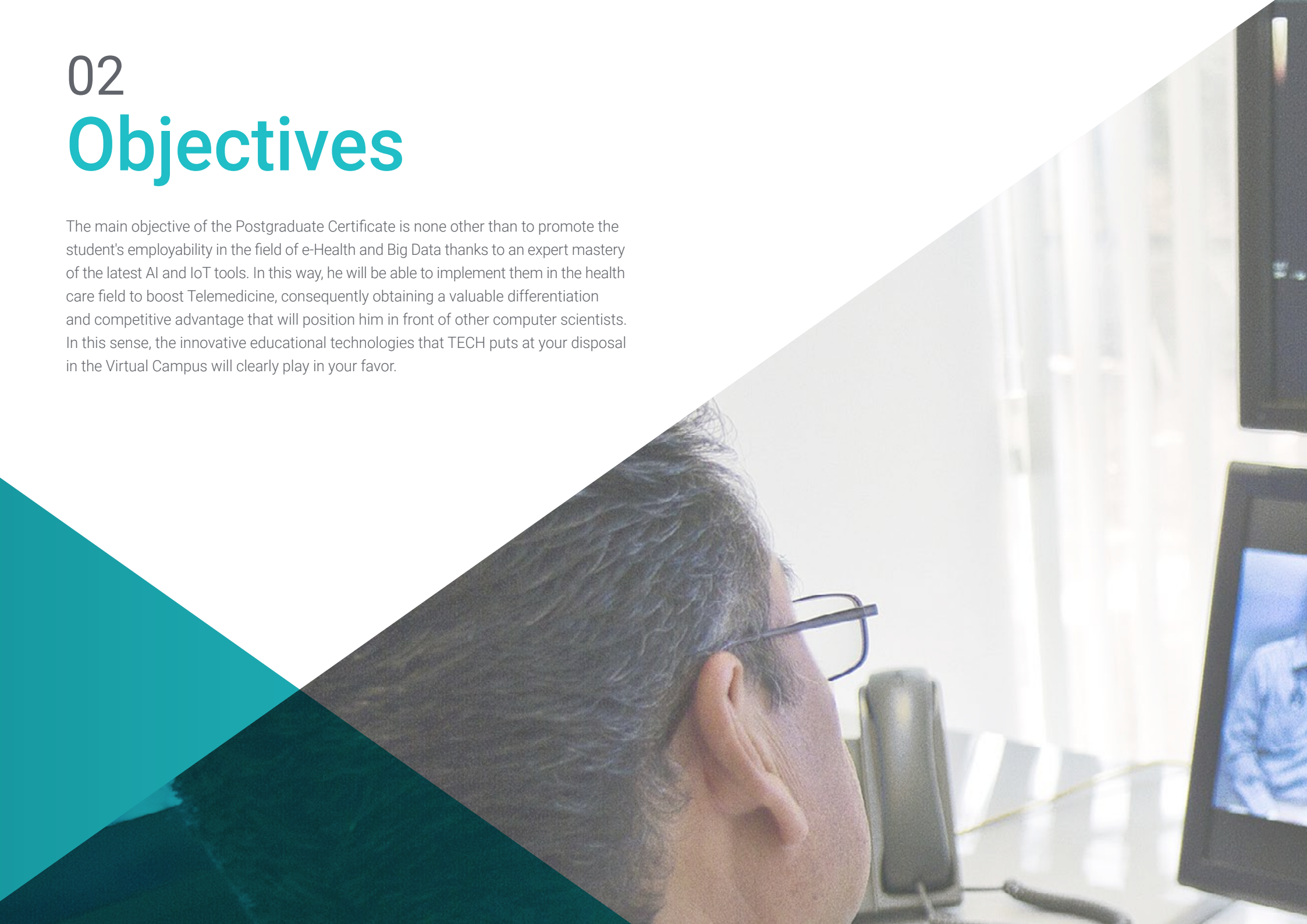
*By achieving these objectives, your AI and IoT tools applied to Telemedicine will be decisive for the management and communication of epidemiological outbreaks"*

## 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 eHealth
- 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 eHealth success stories and mistakes to avoid
- Apply the knowledge acquired to an original business idea

## Specific Objectives

- Propose communication protocols in different scenarios in the healthcare field
- Analyze communication in the IoT as well as its use in eHealth areas
- 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 develop e-Health and IoT products, both in computing and communication

*All the applications of GPU acceleration in medicine will be at your fingertips with this program"*

03
# Course Management

TECH's great commitment to this program is shown in the choice of its teaching team, which is composed of great data scientists with experience in massive processing and parallelization of programs. Additionally, this faculty has sub-specialized in fields of such potential as Intelligent Avionics or Radiophysics, so they have a multidisciplinary profile that will greatly enrich the Postgraduate Certificate.

*Great data scientists with experience in massive processing and parallelization of programs will supervise your academic progress"*

## 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 from the University of Malaga and the University of Seville
- Master's Degree in Intelligent Avionics from 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 GPU

04

# Structure and Content

The syllabus of this Postgraduate Certificate has been designed around a duration of 150 hours, distributed over 6 weeks of academic experience. During this online learning period, students will have unlimited access to a wide range of lessons and supplementary materials, which are fully updated to the latest technological evidence. Additionally, their performance during the program will be even more efficient thanks to the dynamism of the educational cycle, as the contents are presented in resources of different interactive formats.

*6 weeks of specialization in which you will delve into a syllabus with all the key components for the personalization of the health care service"*

## 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 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, 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

"
*You will access this course from your favorite electronic device to analyze diagnostic imaging and monitoring in Telemedicine"*

# 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"*

## Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

"

*At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"*



*You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.*

## A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

❝

*Our program prepares you to face new challenges in uncertain environments and achieve success in your career"*

The case method has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

## Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

> *In 2019, we obtained the best learning results of all online universities in the world.*

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.

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)

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. This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*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.*

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.

**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.

### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

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

### Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.

### 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.

**30%**

**10%**

**8%**

**20%**

**25%**

**4%**

**3%**
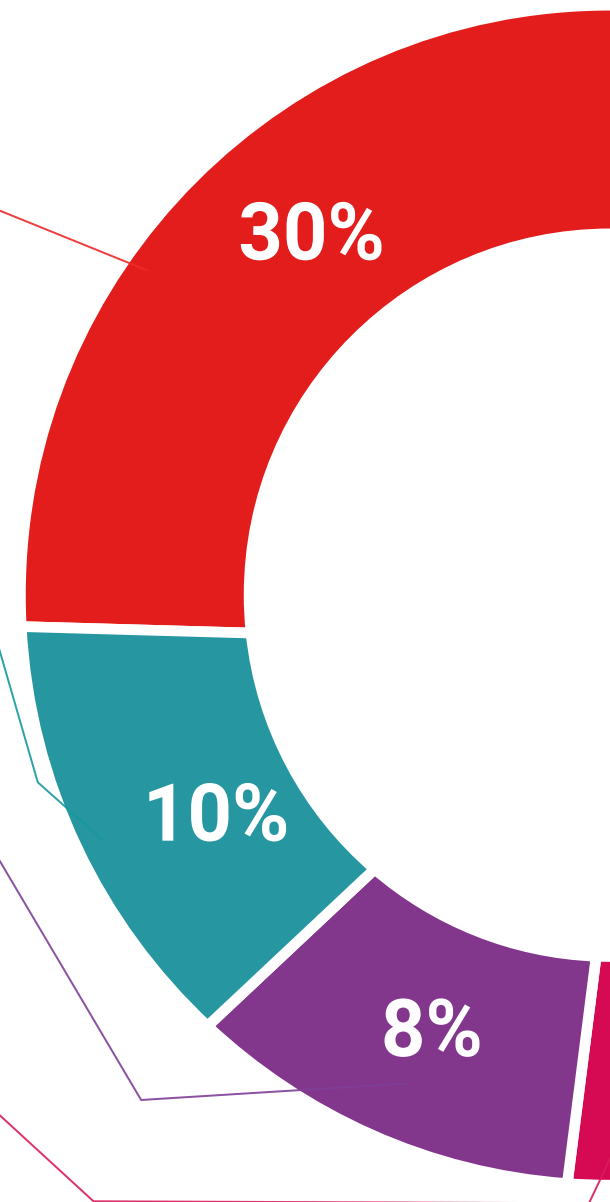
### Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.

### 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".

### 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.

# 06
# Certificate

The Postgraduate Certificate in Artificial Intelligence and IoT Applications in Telemedicine guarantees, in addition to the most rigorous and updated training, access to a Postgraduate Certificate degree issued by TECH Technological University.

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

This **Postgraduate Certificate in Artificial Intelligence and IoT Applications in Telemedicine** contains the most complete and up-to-date program on the market.

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

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

Title: **Postgraduate Certificate in Artificial Intelligence and IoT Applications in Telemedicine**

Official Nº of Hours: **150 h.**

tech technological university

Awards the following

**CERTIFICATE**

to

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

**POSTGRADUATE CERTIFICATE**

in

Artificial Intelligence and IoT Applications in Telemedicine

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

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

June 17, 2020

Tere Guevara Navarro
Dean

Unique TECH Code: AFWORD23S    techtitute.com/certificates

*Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

# Postgraduate Certificate
## Artificial Intelligence and IoT Applications in Telemedicine

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

# Postgraduate Certificate
## Artificial Intelligence and IoT Applications in Telemedicine