

# Postgraduate Certificate

Techniques and Intervention through  
Biomedical Imaging in E-Health





**Postgraduate Certificate**  
Techniques and Intervention  
through Biomedical Imaging  
in E-Health

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

Website: [www.techtitute.com/pk/physiotherapy/postgraduate-certificate/techniques-intervention-through-biomedical-imaging-e-health](http://www.techtitute.com/pk/physiotherapy/postgraduate-certificate/techniques-intervention-through-biomedical-imaging-e-health)

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# 01 Introduction

Clinical imaging and diagnostic techniques associated with visual tests have allowed the field of physiotherapy to advance conscientiously in the establishment of increasingly effective and accurate therapeutic guidelines, adapted to the characteristics of the injury or pathology suffered by the patient. Ultrasound scans, CT scans, MRI scans... Nowadays, professionals in this field have dozens of tests that they can use to effectively and with a minimum margin of error, to treat their clients. However, this is an area that is constantly changing and requires extensive and up-to-date knowledge to understand the evidence, read it and analyze it effectively, something you will be able to work on with this program. Through 150 hours of 100% online educational experience, the graduates will have the opportunity to update themselves on the latest biomedical imaging intervention techniques, as well as to implement them in their professional practice immediately.

“

*Do you want to be up-to-date on the most innovative and effective biomedical imaging intervention techniques? Bet on this Postgraduate Certificate and do not miss the opportunity to get it 100% online”*

Biomedical imaging has become a vital resource for many physical therapy professionals. Having a tool that allows them to clearly visualize the state of the musculoskeletal system has helped them to establish more accurate diagnostic strategies, as well as better therapeutic guidelines that have an impact on the origin of the condition or pathology, increasing the effectiveness of treatments and reducing waiting times.

However, the continuous advances made in this field often make it difficult for specialists to keep up-to-date, forcing them to continue with obsolete and, therefore, less effective practices. In order to help them and facilitate their access to a comprehensive and dynamic update of their knowledge, TECH and its team of experts in Biomedicine have developed a complete program that is perfect for this purpose.

This is a 150-hour educational experience through which the graduates will be able to delve into the latest techniques and strategies for clinical recognition and intervention through different biomedical images. You will have the opportunity to delve into the characteristics, advantages and disadvantages of: computed tomography, magnetic resonance, ultrasound and nuclear medicine. In addition, the program includes a specific module dedicated to radiation protection guidelines, so that the specialist can be up-to-date on safety procedures.

All this in a 100% online way and through multiple theoretical, practical and additional material, which will be available in the Virtual Campus from the beginning of the Postgraduate Certificate. And in order to provide greater flexibility, the entire content can be downloaded to any device with an Internet connection for consultation anywhere and so that the graduate always has the information available, even after the educational experience has ended.

This **Postgraduate Certificate in Techniques and Intervention through Biomedical Imaging in E-Health** contains the most complete and up-to-date Scientific program on the market. Its most outstanding features are:

- ◆ The development of case studies presented by experts in Recognition and Intervention Techniques
- ◆ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ◆ Practical exercises where self-assessment can be used 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

“*A program that reviews the origin of biomedical imaging and its evolution up to the present day, so that you can learn in detail about the changes that have occurred in this field over the years*”

“*You will have at your disposal 150 hours of diverse material, from the most exhaustive and innovative syllabus to real clinical cases and additional high quality content presented in different formats*”

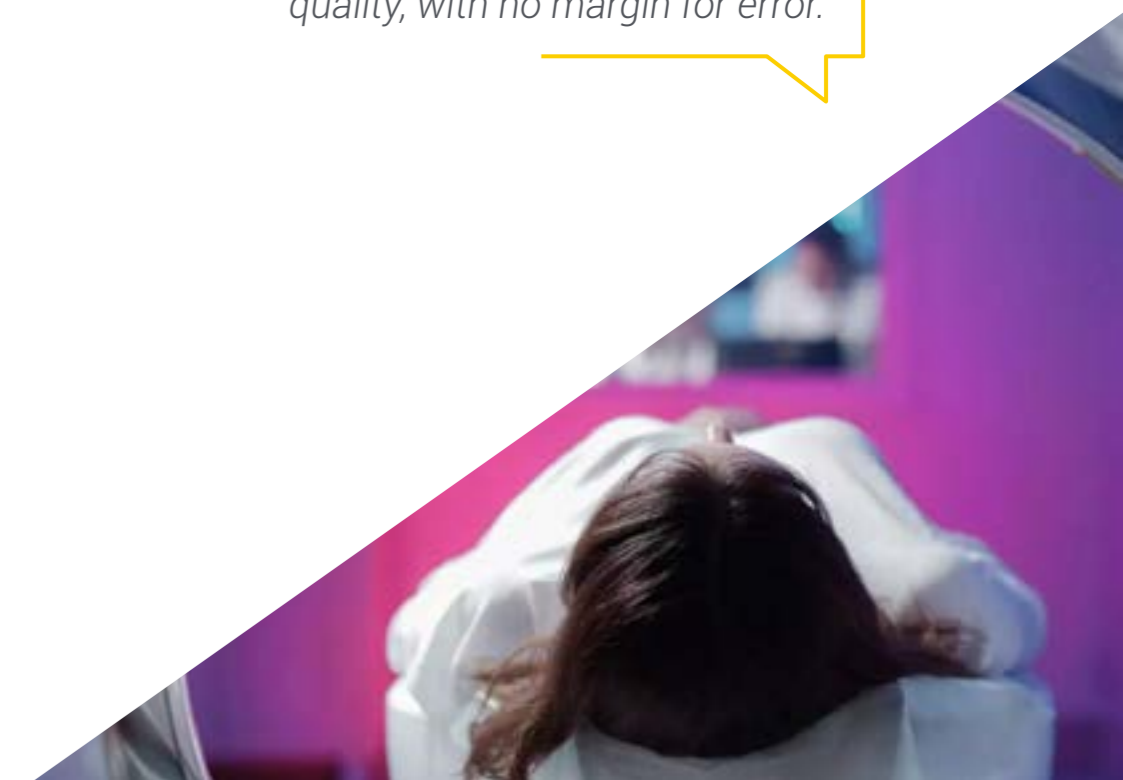
The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

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 educational year. This will be done with the help of an innovative system of interactive videos made by renowned experts.

*The perfect program to polish your skills in the interpretation of radiological images and their clinical applications.*

*You will be able to delve into the keys to magnetic resonance imaging and the most innovative guidelines to generate and obtain images of the highest quality, with no margin for error.*



# 02 Objectives

The analysis and interpretation of biomedical images is part of the daily routine of many physiotherapy professionals. For this reason, it has become a necessity for them to have the most up-to-date and comprehensive knowledge related to the technical characteristics of the different tests. Based on this, the objective of this Postgraduate Certificate is to provide you with all the information that will allow you, in only 150 hours, to know in detail the advances that have been made in this field and to implement them in your practice in an effective and guaranteed manner.

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*If one of your objectives is to implement the safest, most effective and innovative radiological protection guidelines in your practice, TECH will provide you with the protocols that have obtained the best results to date”*

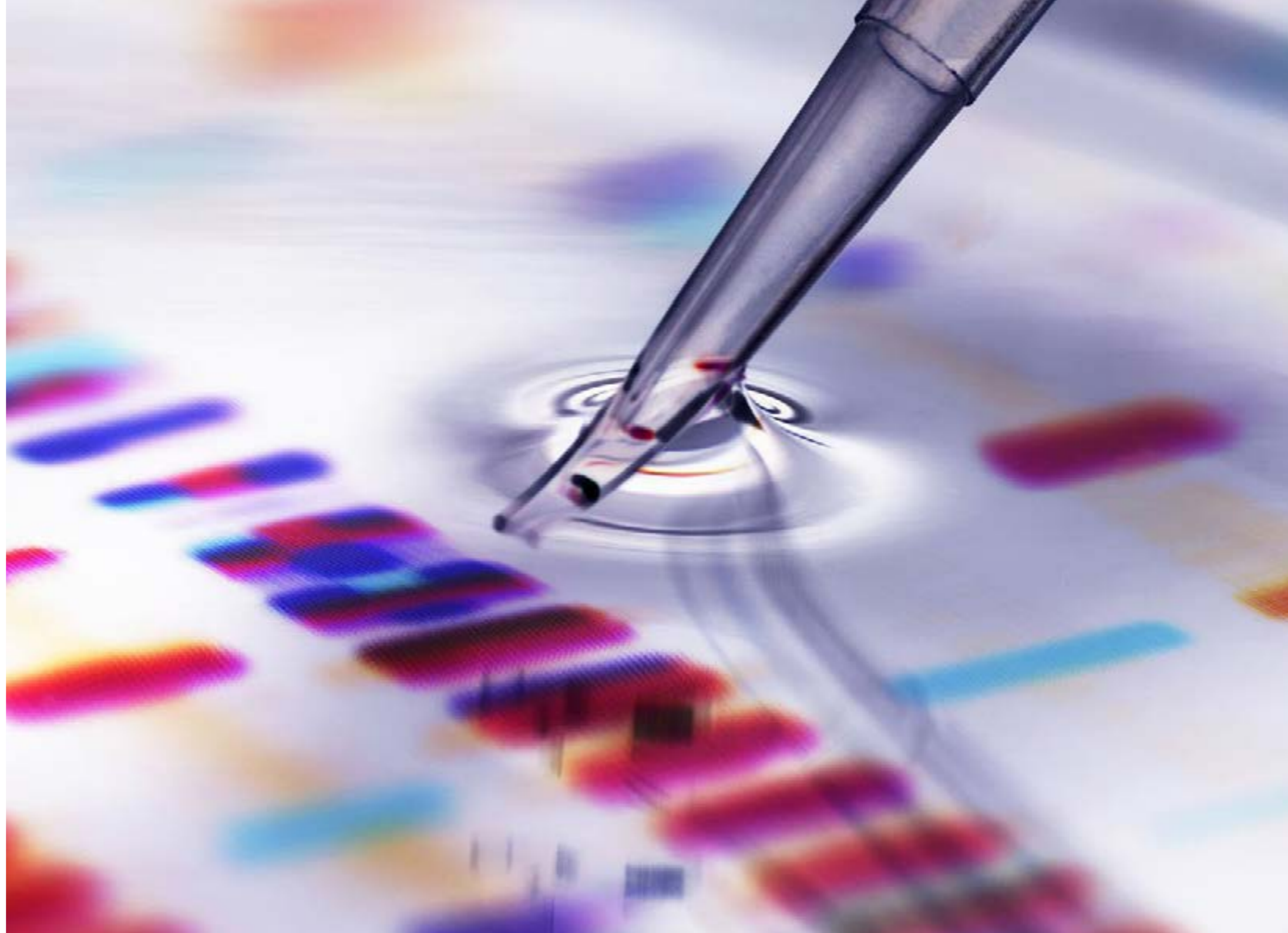


## General Objectives

- ◆ Develop key concepts of medicine that serve as a vehicle to understand clinical medicine
- ◆ Examine the ethical and best practice principles governing the different types of research in health sciences
- ◆ Identify the real clinical applications of the various techniques
- ◆ Provide the necessary resources to practically apply all the concepts in the modules
- ◆ Determine the importance of medical databases
- ◆ 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
- ◆ Collect eHealth success stories and mistakes to avoid



*A program designed to enable you to achieve even your most ambitious goals in a guaranteed way and in just 6 weeks of a unique educational experience"*



## Specific Objectives

- ◆ Examine the fundamentals of medical imaging technologies
- ◆ Develop expertise in radiology, clinical applications and physical fundamentals
- ◆ Analyze ultrasound, clinical applications and physical fundamentals
- ◆ Delve into tomography, computed and emission tomography, clinical applications and physical fundamentals
- ◆ Determine how to manage magnetic resonance imaging, clinical applications and physical fundamentals
- ◆ Generate advanced knowledge of nuclear medicine, differences between PET and SPECT, clinical applications and physical fundamentals
- ◆ Discriminate noise in the image, reasons for it and image processing techniques to reduce it
- ◆ Present image segmentation technologies and explain their usefulness
- ◆ Gain a deeper understanding of the direct relationship between surgical interventions and imaging techniques
- ◆ Establish the possibilities offered by artificial intelligence in recognizing patterns in medical images, and thus deepen innovation in the field

03

# Course Management

TECH, in its maxim to offer the best educational experience, considers it extremely necessary to include in all its programs a faculty specialized in the area in which it is based. Therefore, for this Postgraduate Certificate has selected a faculty versed in the area of Biomedicine. Despite their youth, they are specialists with extensive knowledge of the sector, which the graduate will be able to verify through the exhaustive syllabus they have put together for this educational experience.

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*In addition to actively participating in the development of the syllabus, the teaching team has selected real cases so that you can put into practice the guidelines indicated in the program and perfect your skills”*



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





04

# Structure and Content

The main characteristic of this Postgraduate Certificate, in addition to its convenient, accessible and flexible 100% online format, is the exhaustiveness with which all of its content has been elaborated. The teaching team has invested dozens of hours in searching for all the information that will allow physiotherapy professionals to update their knowledge in relation to biomedical imaging, and in compacting it into only 150 hours of theoretical, practical and additional material. Thanks to their efforts, it has been possible to launch a program that will undoubtedly become a guide for the professionals who access it.

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*If you are interested in learning in detail about the advantages and disadvantages of image-guided interventionism, this educational experience is perfect for you. Don't let it pass you by”*

**Module 1. Techniques, Recognition and Intervention using Biomedical Imaging**

- 1.1. Medical Imaging
  - 1.1.1. Modalities in Medical Imaging
  - 1.1.2. Objectives in Medical Imaging Systems
  - 1.1.3. Medical Imaging Storage Systems
- 1.2. Radiology
  - 1.2.1. Imaging Method
  - 1.2.2. Radiology Interpretation
  - 1.2.3. Clinical Applications
- 1.3. Computed Tomography (CT)
  - 1.3.1. Principle of Operation
  - 1.3.2. Image Generation and Acquisition
  - 1.3.3. Computerized Tomography. Typology
  - 1.3.4. Clinical Applications
- 1.4. Magnetic Resonance Imaging (MRI)
  - 1.4.1. Principle of Operation
  - 1.4.2. Image Generation and Acquisition
  - 1.4.3. Clinical Applications
- 1.5. Ultrasound: Ultrasound and Doppler Sonography
  - 1.5.1. Principle of Operation
  - 1.5.2. Image Generation and Acquisition
  - 1.5.3. Typology
  - 1.5.4. Clinical Applications
- 1.6. Nuclear medicine
  - 1.6.1. Physiological Basis in Nuclear Studies. Radiopharmaceuticals and Nuclear Medicine
  - 1.6.2. Image Generation and Acquisition
  - 1.6.3. Types of Tests
    - 1.6.3.1. Gammagraphy
    - 1.6.3.2. SPECT
    - 1.6.3.3. PET:
    - 1.6.3.4. Clinical Applications



- 1.7. Image-Guided Interventions
  - 1.7.1. Interventional Radiology
  - 1.7.2. Interventional Radiology Objectives
  - 1.7.3. Procedures
  - 1.7.4. Advantages and Disadvantages
- 1.8. Image Quality
  - 1.8.1. Technique
  - 1.8.2. Contrast
  - 1.8.3. Resolution
  - 1.8.4. Noise
  - 1.8.5. Distortion and Artifacts
- 1.9. Medical Imaging Tests. Biomedicine
  - 1.9.1. Creating 3D Images
  - 1.9.2. Biomodels
    - 1.9.2.1. DICOM Standard
    - 1.9.2.2. Clinical Applications
- 1.10. Radiological Protection
  - 1.10.1. European Legislation Applicable to Radiology Services
  - 1.10.2. Safety and Action Protocols
  - 1.10.3. Radiological Waste Management
  - 1.10.4. Radiological Protection
  - 1.10.5. Care and Characteristics of Rooms

“ Do not hesitate and opt for a program designed according to your professional needs and the demands of the Physiotherapy sector”

# 05 Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**. This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

“

*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*



### At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. 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.

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*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.*

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.

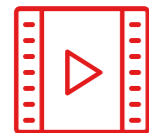
*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

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**

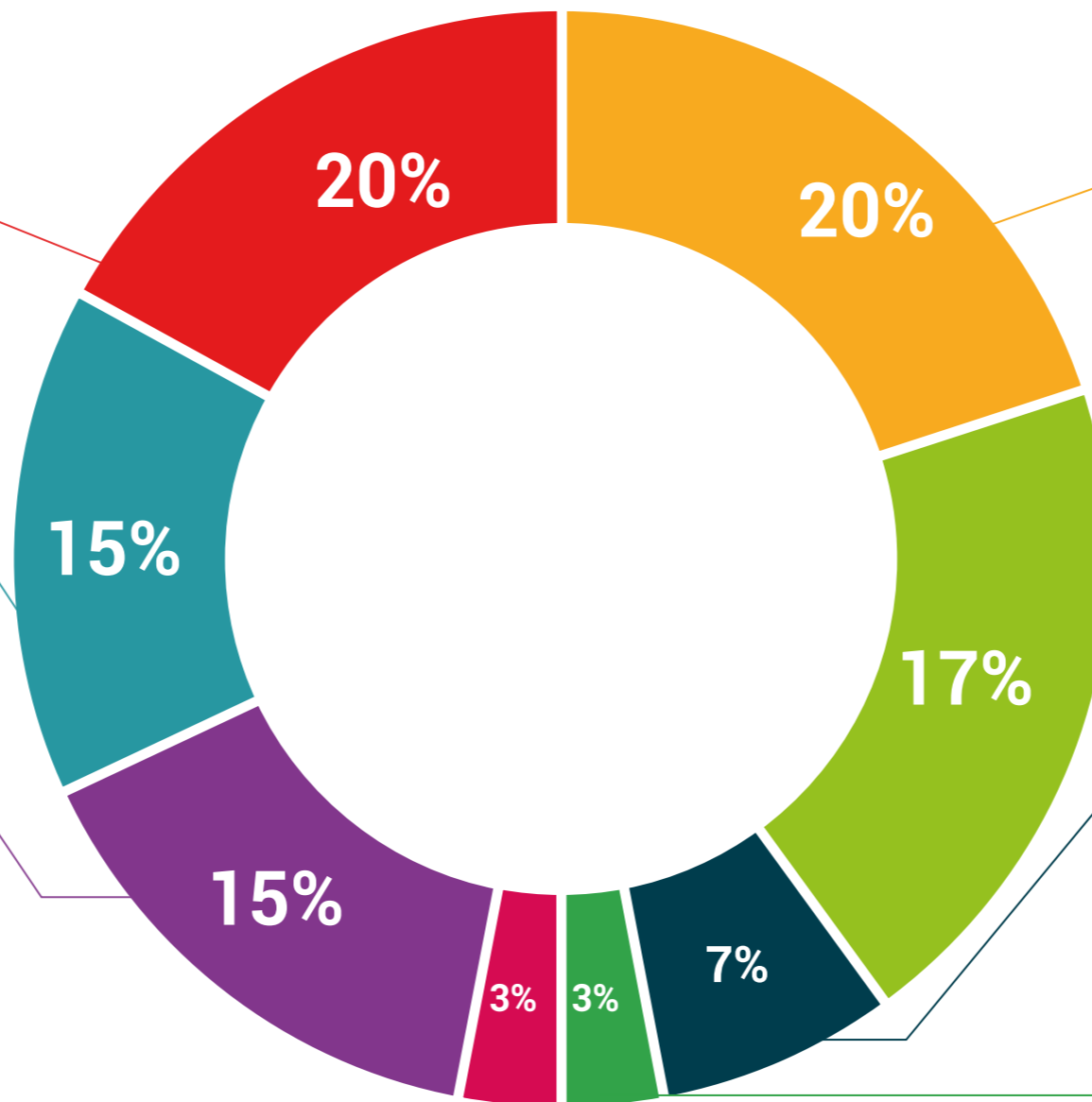
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.



**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

This Postgraduate Certificate in Techniques and Intervention through Biomedical Imaging in E-Health guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate 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 Techniques and Intervention through Biomedical Imaging in E-Health** 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 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 Techniques and Intervention through Biomedical Imaging in E-Health**

Official N° of Hours: **150 h.**



\*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.

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institutions technology learning  
community commitment  
personalized service innovation  
knowledge preservation  
development languages  
virtual classroom

**tech** technological university

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