

# Postgraduate Certificate Ultrasound and Laser Therapy in Physiotherapy





## Postgraduate Certificate Ultrasound and Laser Therapy in Physiotherapy

- » Modality: online
- » Duration: 12 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/physiotherapy/postgraduate-certificate/ultrasound-laser-therapy-physiotherapy](http://www.techtute.com/us/physiotherapy/postgraduate-certificate/ultrasound-laser-therapy-physiotherapy)

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# 01

# Introduction

In spite of its antiquity, the greatest progress in the use of Electromagnetic Fields as a therapeutic tool took place at the end of the 20th century and up to the present day. This progress occurred in parallel to the knowledge and discovery of the physiology of the human being, which facilitated the design and development of different types of treatments in the field of electrotherapy. These changes and innovations have affected all areas and this is how the creation of a program that seeks to offer the principles, novelties and the latest advances in Ultrasound and Laser Therapy arises. All this with a very practical approach, in a 100% online modality, with dynamic materials and taking advantage of the latest technologies.



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*This program will help  
you grow personally and  
professionally as an expert in  
Ultrasound and Laser Therapy”*

The field of application of Electrotherapy is composed of a wide range of specialties that in recent years have increased and have also become more complex, due to the arrival of new technologies and other important advances in this field. In order to face this reality, it is essential to have a broad knowledge of both the pathophysiological mechanisms of the human being, as well as the physicochemical basis of electrotherapy.

The objective of this program in Ultrasound and Laser Therapy in Physiotherapy is to present in an updated way the possible applications of this branch of Electrotherapy in the different neuromusculoskeletal pathologies. It is composed of 2 modules that offer materials and tools of the highest quality, to delve into topics such as the physical principles of Ultrasound Therapy, its physiological effects or the different clinical applications of Laser and Infrared Radiation. All this through the pedagogical methodology of TECH *Relearning*, which guarantees a constant reiteration of the different concepts, ensuring their assimilation by all student profiles.

Any professional who decides to undertake this program will be able to become an expert professional in these branches of Electrotherapy and will find a completely online teaching modality and with an absolute time availability, which can be combined with other work. In addition, it offers the possibility of accessing the content from any device, whether computer, tablet or mobile, as long as you have an Internet connection.

This **Postgraduate Certificate in Ultrasound and Laser Therapy in Physiotherapy** contains the most complete and up-to-date educational program on the market

Its most notable features are:

- ◆ The development of case studies presented by experts in laser in Ultrasound and Laser Therapy in Physiotherapy
- ◆ 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



*Update your knowledge and improve your skills through this Postgraduate Certificate in Ultrasound and Laser Ultrasound Therapy in Physiotherapy"*

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*This program can be your best investment for present and future, if you want to be an expert in Ultrasound applications"*

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 academic year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Increase your skills and update your knowledge of High Frequency Ultrasound Therapy and Infrared Radiation.*

*Make the most of the opportunity to learn about the latest advances in Dosimetry and Infrared Application.*



# 02 Objectives

The Postgraduate Certificate in Ultrasound and Laser Therapy in Physiotherapy is oriented to help those students who seek to become outstanding professionals in this field of Electrotherapy. In addition, the materials and content are as accurate and advanced as possible, to ensure the correct assimilation of the concepts and an optimal improvement of skills by students.





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*Thanks to the materials and the use of the latest educational technology, TECH can guarantee the quality and updating of the contents of its Electrotherapy courses”*



## General Objectives

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- ◆ Improve your knowledge of the rehabilitation professional in the field of electrotherapy
- ◆ Promote work strategies based on a comprehensive approach to the patient as a standard model for achieving excellent care
- ◆ Encourage the acquisition of technical skills and abilities, through a powerful audiovisual system, and the possibility of development through online simulation workshops and/or specific learning
- ◆ Encourage professional stimulation through continuous education and research





## Specific Objectives

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### Module 1. Ultrasound Therapy in Physiotherapy

- ◆ Identify current and developing therapeutic possibilities in the field of neuromusculoskeletal rehabilitation
- ◆ Update your knowledge of nociceptive transmission, as well as its modulation mechanisms by physical means

### Module 2. Other Electromagnetic Fields

- ◆ Know the muscular contraction and its rehabilitation by physical means, applying Electrotherapy as the main agent
- ◆ Master the rehabilitation of neurological injury and its rehabilitation via electrotherapeutic agents



*With this teaching you will be able to expand your knowledge in Electromagnetic Fields, without affecting your routine"*

# 03

## Course Management

This program includes in its teaching staff multiple experts and specialists of great reputation in Ultrasound and Laser in Physical Therapy. After many years of work and professional and teaching trajectory, they offer their experience and pour their knowledge into this training. Additionally, other recognized specialists participate in its design and preparation, which means that the program is developed in an interdisciplinary manner.





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*Learn the latest advances in procedures in the field of Ultrasound and Laser in Physiotherapy, with a reference teaching team"*

## Management



### Dr. León Hernández, Jose Vicente

- ◆ Physiotherapist expert in the Study and Treatment of Pain and Manual Therapy
- ◆ Doctorate in Physiotherapy from the Rey Juan Carlos University
- ◆ Master's Degree in the Study and Treatment of Pain from the Rey Juan Carlos University
- ◆ Degree in Chemical Sciences from the Complutense University of Madrid, specializing in Biochemistry.
- ◆ Diploma in Physiotherapy from the Alfonso X el Sabio University.
- ◆ Member and training coordinator at the Institute of Neuroscience and Movement Sciences

## Coordinators

### Mr. Suso Martí, Luis

- ◆ Physiotherapist
- ◆ Researcher at the Institute for Neurosciences and Movement Sciences
- ◆ Contributor to the popular science magazine NeuroRhab News
- ◆ Physiotherapy Degree: University of Valencia
- ◆ Doctorate, Autonomous University of Madrid
- ◆ Degree in Psychology. Open University of Catalonia
- ◆ Master's Degree in "Advanced Physiotherapy in Pain Management"

### Ms. Losana Ferrer, Alejandro

- ◆ Clinical Physiotherapist and Trainer in New Technologies for Rehabilitation at Rebiotex
- ◆ Physiotherapist at CEMTRO Clinic
- ◆ Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain Management
- ◆ Expert in Neuroorthopedic Manual Therapy
- ◆ University Advanced Training in Therapeutic Exercise and Invasive Physiotherapy for Musculoskeletal Pain
- ◆ Graduate in Physiotherapy in La Salle

**Dr. Cuenca Martínez, Ferrán**

- ◆ Physiotherapist Expert in Pain Management
- ◆ Physiotherapist at FisisCranioClinic
- ◆ Physiotherapist at the Institute of Functional Rehabilitation La Salle
- ◆ Researcher at the Center for Higher University Studies (CSEU La Salle)
- ◆ Researcher at EXINH Research Group
- ◆ Researcher in the Motion in Brans Research Group of the Institute of Neuroscience and Movement Sciences (INCIMOV)
- ◆ Chief editor of The Journal of Move and Therapeutic Science
- ◆ Editor and publisher of NeuroRehab News magazine
- ◆ Author of several scientific articles in national and international journals
- ◆ PhD in Medicine and Surgery from the Autonomous University of Madrid
- ◆ Graduate in Physiotherapy from the University of Valencia
- ◆ Master's Degree in Advanced Physiotherapy in Pain Treatment by the UAM

**Ms. Merayo Fernández, Lucía**

- ◆ Physiotherapist Expert in Pain Management
- ◆ Physiotherapist in the Navarra Health Service
- ◆ Physiotherapist. Doctor San Martin Ambulatory
- ◆ Degree in Physiotherapy
- ◆ Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain

**Dr. Gurdíel Álvarez, Francisco**

- ◆ Physiotherapist at Powerexplosive
- ◆ Physiotherapist at Fisad Clinic
- ◆ Physiotherapist for Ponferradina Sports Society
- ◆ D. in Health Sciences from the Rey Juan Carlos University
- ◆ Degree in Physiotherapy by the University of Leon
- ◆ Degree in Psychology from UNED
- ◆ Master in Advanced Physiotherapy in the Treatment of Musculoskeletal Pain by the Autonomous University of Madrid
- ◆ Expert in Orthopedic Manual Therapy and Myofascial Pain Syndrome by the European University

# 04

## Structure and Content

The structure of the contents offered in this program has been designed by a team of highly reputable teaching professionals, who have prepared the training based on the objectives of offering the best materials and in the most updated way possible. This is why TECH can guarantee the highest quality, offered through new educational technologies.







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*This Postgraduate Certificate in  
Ultrasound and Laser Therapy  
in Physiotherapy contains the  
most complete and up-to-date  
Scientific program on the market”*

## Module 1. Ultrasound Therapy in Physiotherapy

- 1.1. Physical Principles of Ultrasound Therapy
  - 1.1.1. Definition of Ultrasound Therapy
  - 1.1.2. Main Physical Principles of Ultrasound Therapy
- 1.2. Physiological Effects of Ultrasound Therapy
  - 1.2.1. Mechanisms of Action of Therapeutic Ultrasound
  - 1.2.2. Therapeutic Effects of Ultrasound Therapy
- 1.3. Main Parameters of Ultrasound Therapy
- 1.4. Practical Applications
  - 1.4.1. Ultrasound Treatment Methodology
  - 1.4.2. Practical Applications and Indications of Ultrasound Therapy
  - 1.4.3. Ultrasound Therapy Research Studies
- 1.5. Ultrasonophoresis
  - 1.5.1. Definition of Ultrasonophoresis
  - 1.5.2. Mechanisms of Ultrasonophoresis
  - 1.5.3. Factors on Which the Effectiveness of Ultrasonophoresis Depends
  - 1.5.4. Ultrasonophoresis Considerations to Take into Account
  - 1.5.5. Research Studies on Ultrasonophoresis
- 1.6. Contraindications of Ultrasound Therapy
  - 1.6.1. Absolute Contra-indications
  - 1.6.2. Relative Contra-indications
  - 1.6.3. Precautions
  - 1.6.4. Recommendations
  - 1.6.5. Contraindications to Ultrasonophoresis
- 1.7. High Frequency Ultrasound Therapy (OPAF)
  - 1.7.1. Definition of HFPW Therapy
  - 1.7.2. Parameters of HFPW Therapy and HIFU Therapy
- 1.8. Practical Applications of High Frequency Ultrasound Therapy
  - 1.8.1. Indications for HFPW and HIFU Therapy
  - 1.8.2. HFPW and HIFU Therapy Research Studies
- 1.9. Contraindications to High Frequency Ultrasound Therapy



**Module 2. Other Electromagnetic Fields**

- 2.1. Laser. Physical principles |
  - 2.1.1. Laser. Definition
  - 2.1.2. Laser Parameters
  - 2.1.3. Laser. Classification
  - 2.1.4. Laser. Physical principles |
- 2.2. Laser. Physiological Effects
  - 2.2.1. Interrelationship between Laser and Living Tissues
  - 2.2.2. Biological Effects of Low and Medium Power Lasers
  - 2.2.3. Direct Effects of Laser Application
    - 2.2.3.1. Photothermal Effect
    - 2.2.3.2. Photochemical Effect
    - 2.2.3.3. Photoelectric Stimulus
  - 2.2.4. Indirect Effects of Laser Application
    - 2.2.4.1. Microcirculation Stimulation
    - 2.2.4.2. Trophism Stimulus and Repair
- 2.3. Laser. Therapeutic Effects
  - 2.3.1. Analgesia
  - 2.3.2. Inflammation and Edema
  - 2.3.3. Reparation
  - 2.3.4. Dosimetry
    - 2.3.4.1. Recommended Treatment Dose in Low Level Laser Therapy Application according to WALT Guidelines
- 2.4. Laser. Clinical Applications
  - 2.4.1. Laser Therapy in Osteoarthritis
  - 2.4.2. Laser Therapy in Chronic Low Back Pain
  - 2.4.3. Laser Therapy in Epicondylitis
  - 2.4.4. Laser Therapy in Rotator Cuff Tendinopathy
  - 2.4.5. Laser Therapy in Cervicalgias
  - 2.4.6. Laser Therapy in Musculoskeletal Disorders
  - 2.4.7. Other Practical Laser Therapy Applications
  - 2.4.8. Conclusions

- 2.5. Laser. Contraindications
  - 2.5.1. Precautions
  - 2.5.2. Contraindications
    - 2.5.2.1. Conclusions
- 2.6. Infrared Radiation. Physical principles |
  - 2.6.1. Introduction
    - 2.6.1.1. Definition
    - 2.6.1.2. Classification
  - 2.6.2. Infrared Radiation Generation
    - 2.6.2.1. Luminous Emitters
    - 2.6.2.2. Non-Luminous Emitters
  - 2.6.3. Physical Properties
- 2.7. Infrared Physiological Effects
  - 2.7.1. Physiological Effects on the Skin
  - 2.7.2. Infrared and Chromophores in Mitochondria
  - 2.7.3. Radiation Absorption in Water Molecules
  - 2.7.4. Infrared at the Cell Membrane
  - 2.7.5. Conclusions
- 2.8. Therapeutic Effects of Infrared
  - 2.8.1. Introduction
  - 2.8.2. Local Effects of Infrared
    - 2.8.2.1. Erythematous
    - 2.8.2.2. Anti-Inflammatories
    - 2.8.2.3. Scarring
    - 2.8.2.4. Sweating
    - 2.8.2.5. Relaxation
    - 2.8.2.6. Analgesia
  - 2.8.3. Infrared Systemic Effects
    - 2.8.3.1. Cardiovascular System Benefits
    - 2.8.3.2. Systemic Muscle Relaxation



- 2.8.4. Dosimetry and Infrared Application
  - 2.8.4.1. Infrared Lamps
  - 2.8.4.2. Non-Luminous Lamps
  - 2.8.4.3. Luminous Lamps
  - 2.8.4.4. Monochromatic Infrared Energy (MIRE)
- 2.8.5. Conclusions
- 2.9. Practical Applications
  - 2.9.1. Introduction
  - 2.9.2. Clinical Applications
    - 2.9.2.1. Osteoarthritis and Infrared Radiation
    - 2.9.2.2. Lumbago and Infrared Radiation
    - 2.9.2.3. Fibromyalgia and Infrared
    - 2.9.2.4. Infrared Saunas in Cardiopathies
  - 2.9.3. Conclusions
- 2.10. Infrared Contraindications
  - 2.10.1. Precautions/Adverse Effects
    - 2.10.1.1. Introduction
    - 2.10.1.2. Consequences of Poor Infrared Dosing
    - 2.10.1.3. Precautions
    - 2.10.1.4. Formal Contraindications
  - 2.10.2. Conclusions

“*A unique, key, and decisive experience to boost your professional development experts in laser in Ultrasound and Laser Therapy in Physiotherapy*”



# 05 Methodology

This 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.





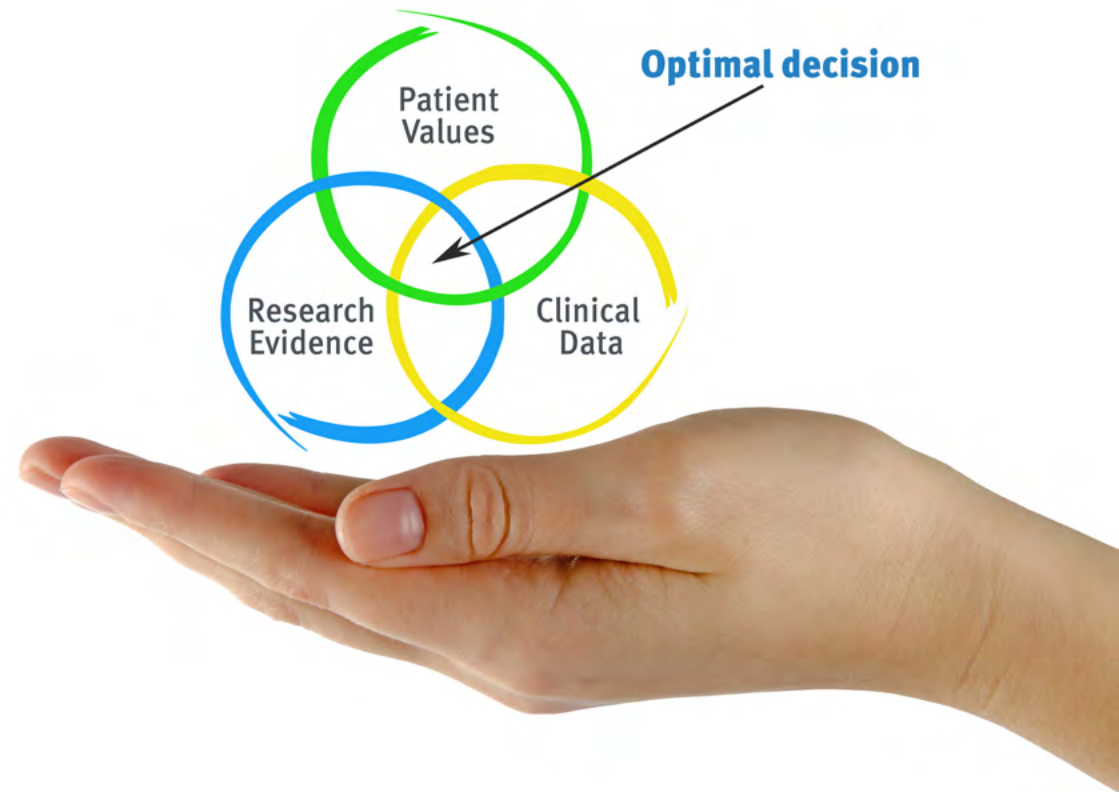
““

*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

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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

*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 enabled more than 65,000 physiotherapists/kinesiologists with unprecedented success in all clinical specialties, regardless of the workload. Our educational 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.

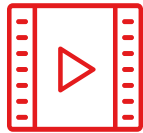
*Relearning will allow you to learn with less effort and better performance, involving you more in your education, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

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 adapted in 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, students can watch them as many times as they want.



#### Interactive Summaries

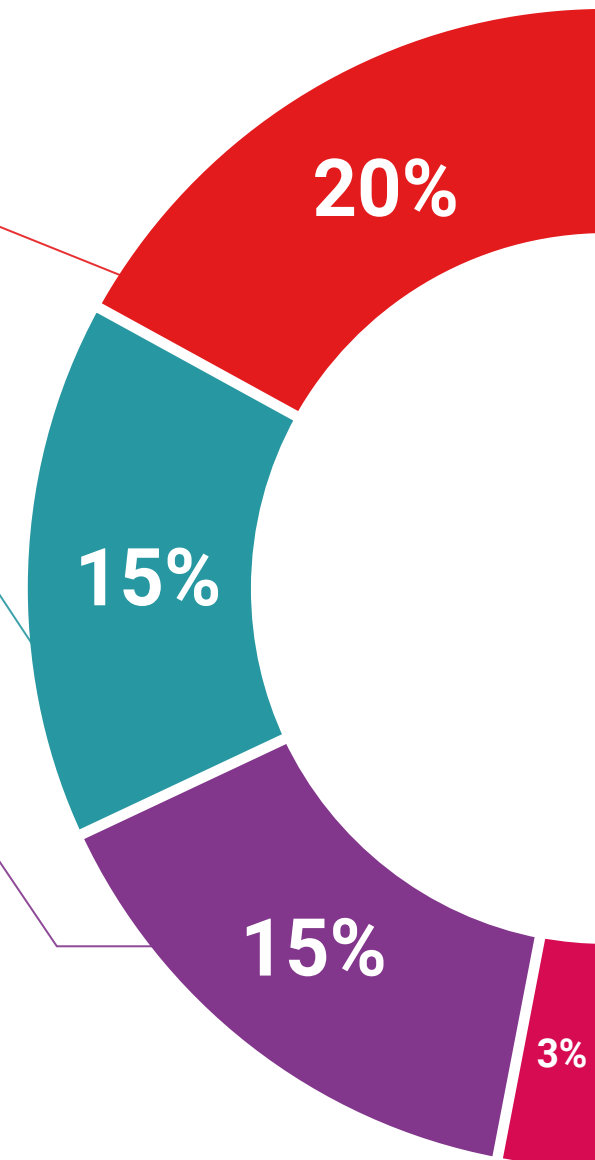
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

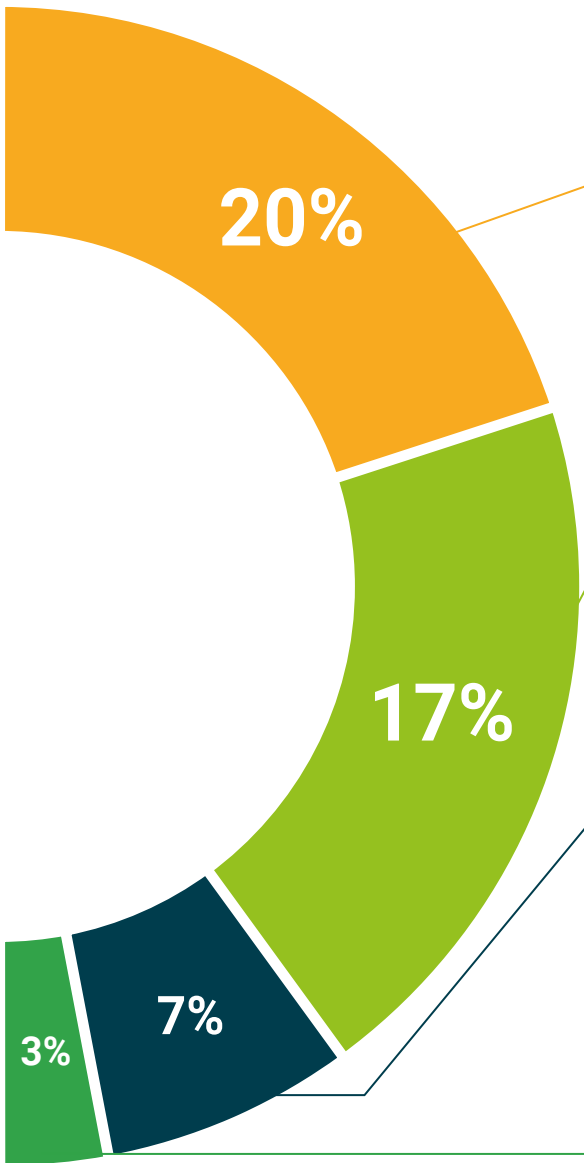
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### 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.





#### 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 assess and re-assess 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 suggesting that observing third-party experts can be useful. 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 Certificate Ultrasound and Laser Therapy in Physiotherapy guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.



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

This **Postgraduate Certificate in Ultrasound and Laser Therapy in Physiotherapy** 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 diploma 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 Ultrasound and Laser Therapy in Physiotherapy.**  
Official N° of Hours: **300 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.



future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
online training  
development language  
virtual classroom

**tech** technological  
university

**Postgraduate Certificate**  
Ultrasound and Laser  
Therapy in Physiotherapy

- » Modality: online
- » Duration: 12 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Certificate

## Ultrasound and Laser Therapy in Physiotherapy

