

# Postgraduate Certificate Magnetotherapy in Physical Activity and Sport

Endorsed by the NBA





## Postgraduate Certificate Magnetotherapy in Physical Activity And Sport

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

Website: [www.techtute.com/us/sports-science/postgraduate-certificate/magnetotherapy-physical-activity-sport](http://www.techtute.com/us/sports-science/postgraduate-certificate/magnetotherapy-physical-activity-sport)

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01

# Introduction

Technological advances have favored the appearance of novel techniques for pain reduction that are frequently used in musculoskeletal pathologies. In this sense, in recent years the use of magnetotherapy has become widespread, due to the multiple benefits it brings to people with injuries or localized pain. In order to increase the training of sports science professionals in the use of this tool, TECH has designed this high educational level training program.

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*Learn about the main advantages of magnetotherapy in pain reduction and apply this technique in injured athletes"*



In the treatment of pain, the use of electromagnetic fields as a therapeutic tool has been used since ancient times, but it is since the end of the last century when it began to experience a breakthrough. This progress ran parallel to the ever-increasing knowledge of human physiology, which facilitated the design and development of different types of treatments based on the application of electromagnetic fields.

Magnetotherapy consists of the application of magnetic fields, either of high or low intensity, in the area to be treated, in such a way as to achieve the reduction or elimination of pain. For this reason, its use is especially widespread in musculoskeletal pathologies and, of course, has a great impact on the treatment of injured athletes.

In this sense, the specialization of sports science professionals is essential to achieve an effective application, which will allow them to improve both personally and professionally. In this context, at TECH we wanted to improve the training of all sports science professionals who work in the rehabilitation of injured athletes and who, therefore, can find in this technique a useful tool for their daily practice. In this way, we offer you this program with an absolutely innovative methodology accompanied by a multitude of practical cases, which favors the understanding of the intensive theoretical part that we provide.

One of the main advantages of this program is that, since it is 100% online, it is the student who decides where and when to study. Without having to face any kind of limitation, either in terms of time or travel to a physical location. All this, with the intention of facilitating to the maximum the possibility of study for professionals who must combine their training with the rest of their daily obligations.

This **Postgraduate Certificate in Magnetotherapy in Physical Activity and Sport** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ The development of case studies presented by experts in magnetotherapy.
- ◆ The graphic, schematic, and practical contents of which they are composed provide scientific and practical information on the disciplines that are essential for professional practice
- ◆ News on the role of the sports science professional in the application of magnetotherapy
- ◆ Practical exercises where the self-assessment process can be carried out to improve learning
- ◆ Algorithm-based interactive learning system for decision-making in the situations that are presented to the student
- ◆ Its special emphasis on research methodologies on electrotherapy applied to sports sciences
- ◆ 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



*TECH offers you this totally new program in magnetotherapy so that you will be able to introduce it in your daily practice with total security"*

“

*Immerse yourself in the study of this high-level course and improve your skills as a sports professional”*

“

*This 100% online Postgraduate Certificate will allow you to combine your studies with your professional work while expanding your knowledge in this field”*

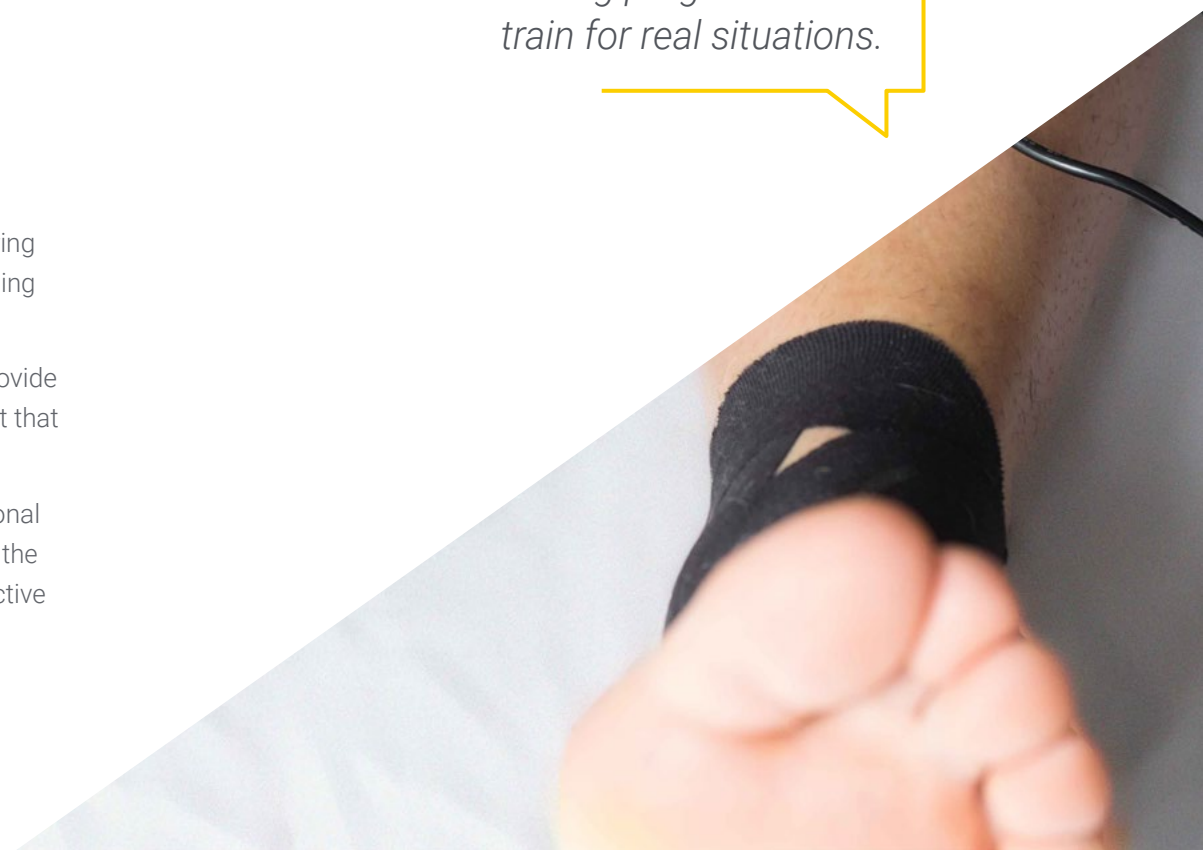
The teaching staff includes professionals from the field of sports science, who bring their experience to this training program, as well as renowned specialists from leading societies and prestigious universities.

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 throughout the program. For this purpose, the professional will be assisted by an innovative interactive video system developed by renowned experts in magnetotherapy with extensive experience in the field.

*This Postgraduate Certificate is the best investment you can make in the selection of a refresher program for two reasons: in addition to updating your knowledge in Magnetotherapy, you will obtain a certificate from the leading online university in Spanish: TECH.*

*The course allows training in simulated environments, which provide immersive learning programmed to train for real situations.*



02

# Objectives

The Postgraduate Certificate in Magnetotherapy in Physical Activity and Sport is oriented to help the sports science professional in their daily practice in situations where the application of electrotherapy is necessary.







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*This program is designed for you to update your knowledge in electrotherapy, with the use of the latest educational technology, to contribute with quality and safety to decision making in this new field"*



## General Objectives

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- ◆ Update the knowledge of sports science professionals 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 professional stimulus through continuing education and research
- ◆ Encourage the acquisition of technical skills and abilities, through a powerful audio-visual system, and the possibility of development through online simulation workshops and/or specific training





## Specific Objectives

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- ◆ Broaden your knowledge of new applications of electromagnetic laser radiation in the rehabilitation of neuromusculoskeletal pathologies



*The sports field requires prepared professionals and we give you the keys to position yourself among the professional elite"*



03

# Course Management

Our team of teachers, experts in electrotherapy, has a wide prestige in the profession and are professionals with years of teaching experience who have come together to help you give a boost to your profession. To this end, they have developed this program with the latest developments in the field that will allow you to specialize and increase your skills in this sector.





“

*Learn from the best professionals and  
become a successful professional yourself”*



## Management



### Dr. León Hernández, Jose Vicente

- ♦ Doctorate in Physiotherapy from the Rey Juan Carlos University
- ♦ Degree in Chemical Sciences from the Complutense University of Madrid, specializing in Biochemistry
- ♦ Postgraduate Certificate in Physiotherapy from the Alfonso X el Sabio University
- ♦ Master's Degree in the Study and Treatment of Pain from the Rey Juan Carlos University

## Coordinators

### Suso Martí, Luis.

- ◆ Physiotherapy Degree: D]
- ◆ Master's Degree in "Advanced Physiotherapy in Pain Management
- ◆ Doctoral candidate

### Cuenca Martínez, Ferrán

- ◆ Physiotherapy Degree
- ◆ Master's Degree in "Advanced Physiotherapy in Pain Management
- ◆ Doctoral candidate

### Gurdiel Álvarez, Francisco.

- ◆ Physiotherapy Degree
- ◆ Expert in Orthopedic Manual Therapy and Myofascial Pain Syndrome
- ◆ Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain Management

### Merayo Fernández, Lucía.

- ◆ Graduate in Physiotherapy
- ◆ Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain Management

### Losana Ferrer, Alejandro.

- ◆ Physiotherapist
- ◆ Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain Management
- ◆ Expert in Neuro-Orthopedic Manual Therapy
- ◆ University Advanced Training in Therapeutic Exercise and Invasive Physiotherapy for Musculoskeletal Pain

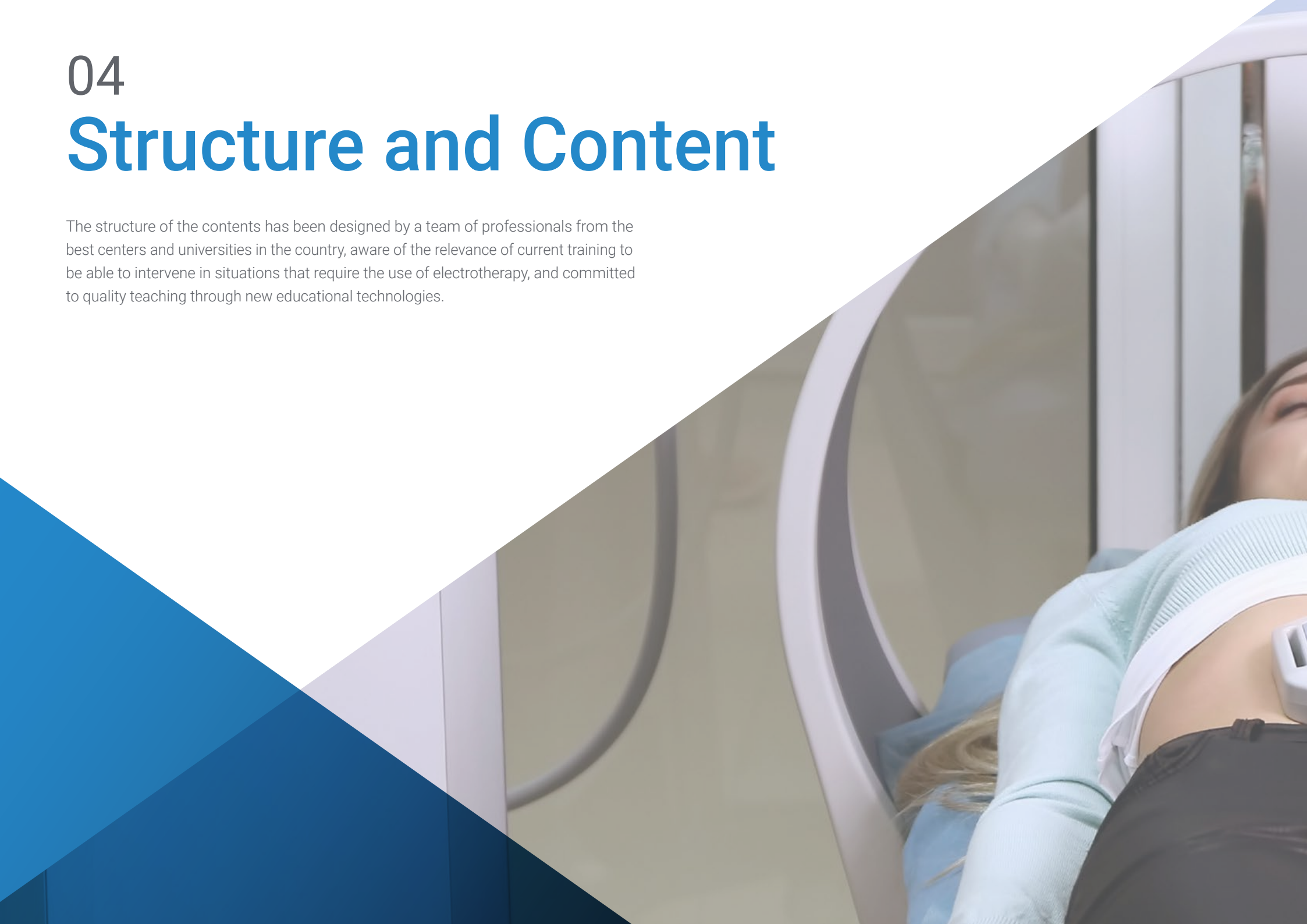


*Our teaching team will provide you with all their knowledge so that you are up to date with the latest information on the subject"*

04

# Structure and Content

The structure of the contents has been designed by a team of professionals from the best centers and universities in the country, aware of the relevance of current training to be able to intervene in situations that require the use of electrotherapy, and committed to quality teaching through new educational technologies.





“

*We have the most complete and up-to-date academic program in the market. We want to put at your disposal the best training”*



## Module 1. Magnetotherapy

- 1.1. Magnetotherapy Physical Principles
  - 1.1.1. Introduction
  - 1.1.2. History of Magnetotherapy
  - 1.1.3. Definition
  - 1.1.4. Principles of Magnetotherapy
    - 1.1.4.1. Magnetic Fields on Earth
    - 1.1.4.2. Physical Principles
  - 1.1.5. Biophysical Interactions with Magnetic Fields
- 1.2. Magnetotherapy Physiological Effects
  - 1.2.1. Effects of Magnetotherapy on Biological Systems
    - 1.2.1.1. Biochemical Effects
    - 1.2.1.2. Cellular Effect
      - 1.2.1.2.1. Effects on Lymphocytes and Macrophages
      - 1.2.1.2.2. Effects on Cell Membrane
      - 1.2.1.2.3. Effects on the Cytoskeleton
      - 1.2.1.2.4. Effects on the Cytoplasm
    - 1.2.1.3. Conclusion On the Effect on the Cell
    - 1.2.1.4. Effect on Bone Tissue
- 1.3. Magnetotherapy Therapeutic Effects
  - 1.3.1. Introduction
  - 1.3.2. Inflammation
  - 1.3.3. Vasodilatation
  - 1.3.4. Analgesia
  - 1.3.5. Increased Calcium and Collagen Metabolism
  - 1.3.6. Reparation
  - 1.3.7. Muscle Relaxation
- 1.4. Main Magnetic Field Parameters
  - 1.4.1. Introduction
  - 1.4.2. Magnetic Field Parameters
    - 1.4.2.1. Intensity
    - 1.4.2.2. Frequency (F)





- 1.4.3. Dosimetry of Magnetic Fields
  - 1.4.3.1. Frequency of Application
  - 1.4.3.2. Application Time
- 1.5. Types of Emitters and Their Application
  - 1.5.1. Introduction
  - 1.5.2. Electromagnetic Fields
    - 1.5.2.1. Total Body or Global Application
    - 1.5.2.2. Regional Application
  - 1.5.3. Local Magnetic Fields Induced with Magnets
    - 1.5.3.1. Conclusions
- 1.6. Magnetotherapy. Clinical Applications
  - 1.6.1. Introduction
  - 1.6.2. Arthrosis
    - 1.6.2.1. Electromagnetic Fields and Chondrocyte Apoptosis
    - 1.6.2.2. Early-Stage Knee Osteoarthritis
    - 1.6.2.3. Advanced Stage Osteoarthritis
    - 1.6.2.4. Conclusion on Osteoarthritis and Pulsed Electromagnetic Fields
  - 1.6.3. Bone Consolidation
    - 1.6.3.1. Review of Literature on Bone Consolidation
    - 1.6.3.2. Bone Consolidation in Long Bone Fractures
    - 1.6.3.3. Bone Consolidation in Short Bone Fractures
  - 1.6.4. Shoulder Pathology
    - 1.6.4.1. Shoulder Impingement
    - 1.6.4.2. Rotator Cuff Tendinopathy
      - 1.6.4.2.1. Rheumatoid Arthritis
      - 1.6.4.2.2. Conclusions
- 1.7. Magnetotherapy. Contraindications
  - 1.7.1.1. Introduction
  - 1.7.1.2. Possible Adverse Effects Studied
  - 1.7.1.3. Precautions
  - 1.7.1.4. Formal Contraindications
  - 1.7.1.5. Conclusions



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

# 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"*

### 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.*



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

### 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 is the most widely used learning system in the best faculties in the world. 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 we face in the case method, an action-oriented learning method. Throughout the program, the studies 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.



## 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.

*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.



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.

With this methodology, we have 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, markets, and financial 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.



In this program you will have access to the best educational material, prepared with you 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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



### 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 our future difficult decisions.



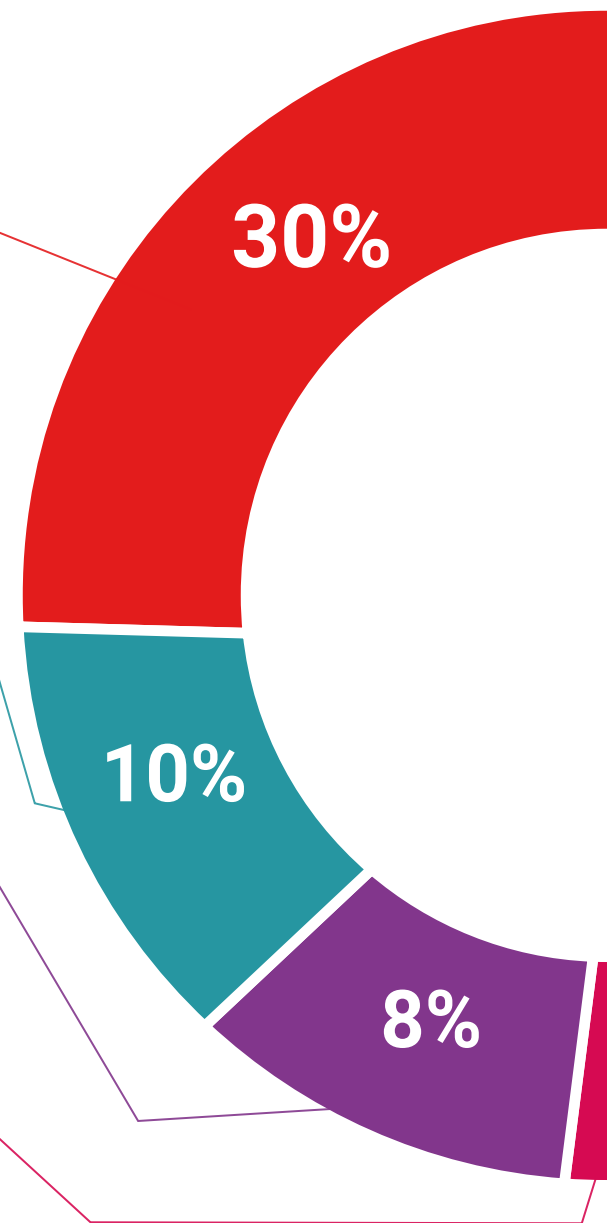
### Practicing Skills and Abilities

Students 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, international guides... in our virtual library you will have access to everything you need to complete your education.





#### Case Studies

You will complete a selection of the best case studies in the field used at Harvard. Cases that are presented, analyzed, and supervised by the best specialists in the world.



#### Interactive Summaries

We present 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 assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.





06

# Certificate

Through a different and stimulating learning experience, you will be able to acquire the necessary skills to take a big step in your education. An opportunity to progress, with the support and monitoring of a modern and specialized university, which will propel you to another professional level.





“

*Add to your CV a program in  
Introduction to Sports Law in a  
highly competitive professional”*

This XPostgraduate Certificate in Magnetotherapy in Physical Activity and Sport 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 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 Magnetotherapy in Physical Activity and Sport

Official Number of Hours: 125 hours.

Endorsed by the NBA



\*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  
development language  
virtual classroom



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