

# 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 Global University
- » Accreditation: 5 ECTS
- » 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"*

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*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”*

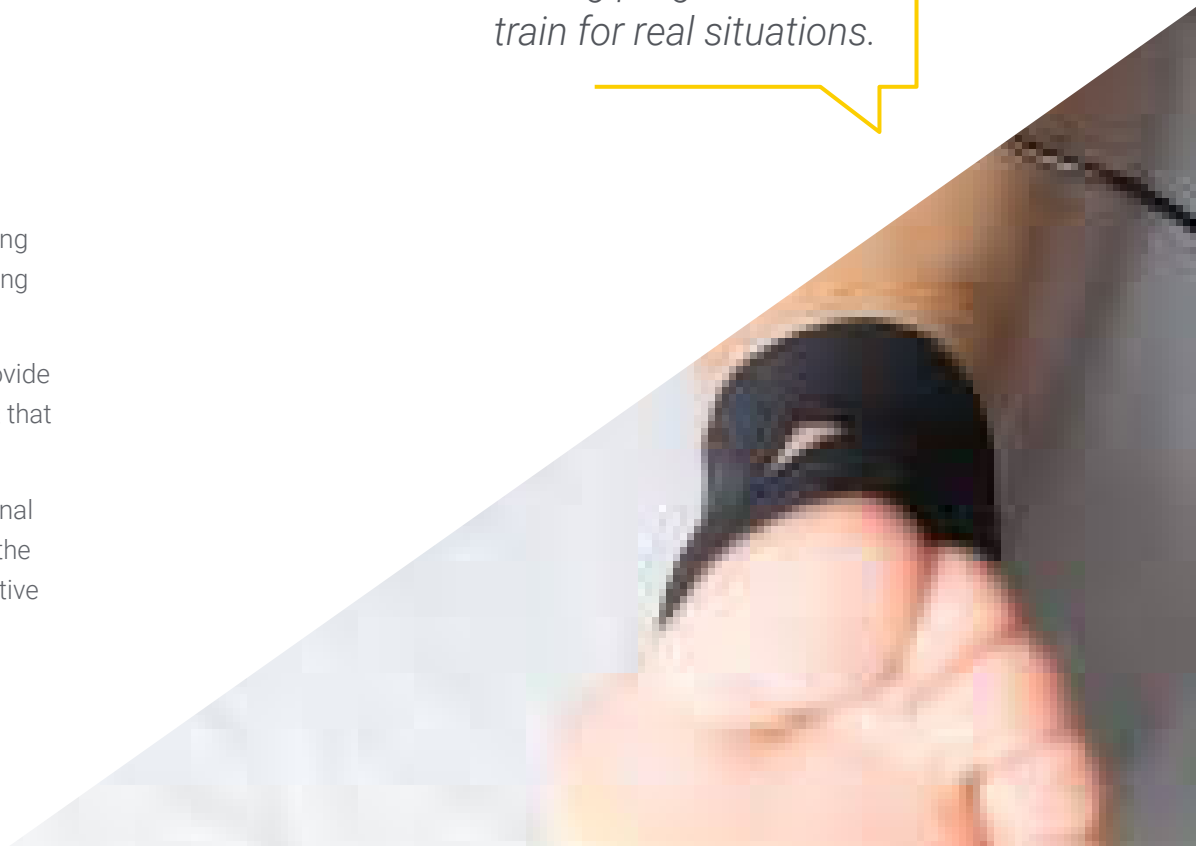
*This Postgraduate Certificate is the best investment you can make in the selection of a refresher program for two reasons: in addition to updating your knowledge in Magnetotherapy, you will obtain a certificate from the leading online university in Spanish: TECH.*

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

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.



# 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

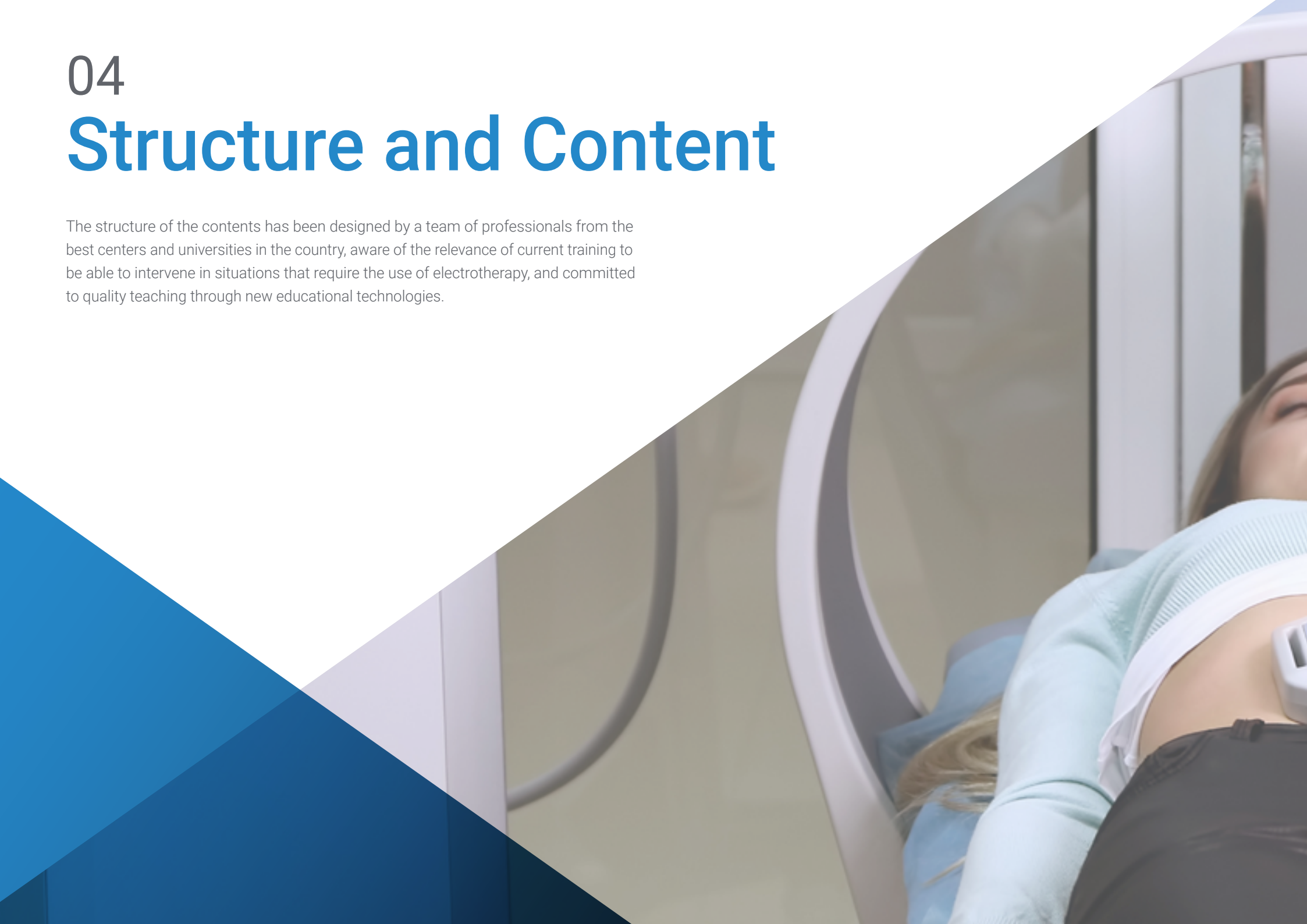


*Our teaching team will provide you with all their knowledge so that you are up to date with the latest information on the subject"*

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 Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.



“

*TECH will prepare you to face new challenges in uncertain environments and achieve success in your career”*

## The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.

The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

“

*At TECH you will NOT have live classes  
(which you might not be able to attend)”*





### The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

“*TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want*”

## Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.



## Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

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



## A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



*The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule”*

### The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student 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.



## The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

*Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.*

*You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.*



As such, the best educational materials, thoroughly prepared, will be available in this program:



#### 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.



#### Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



#### 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".

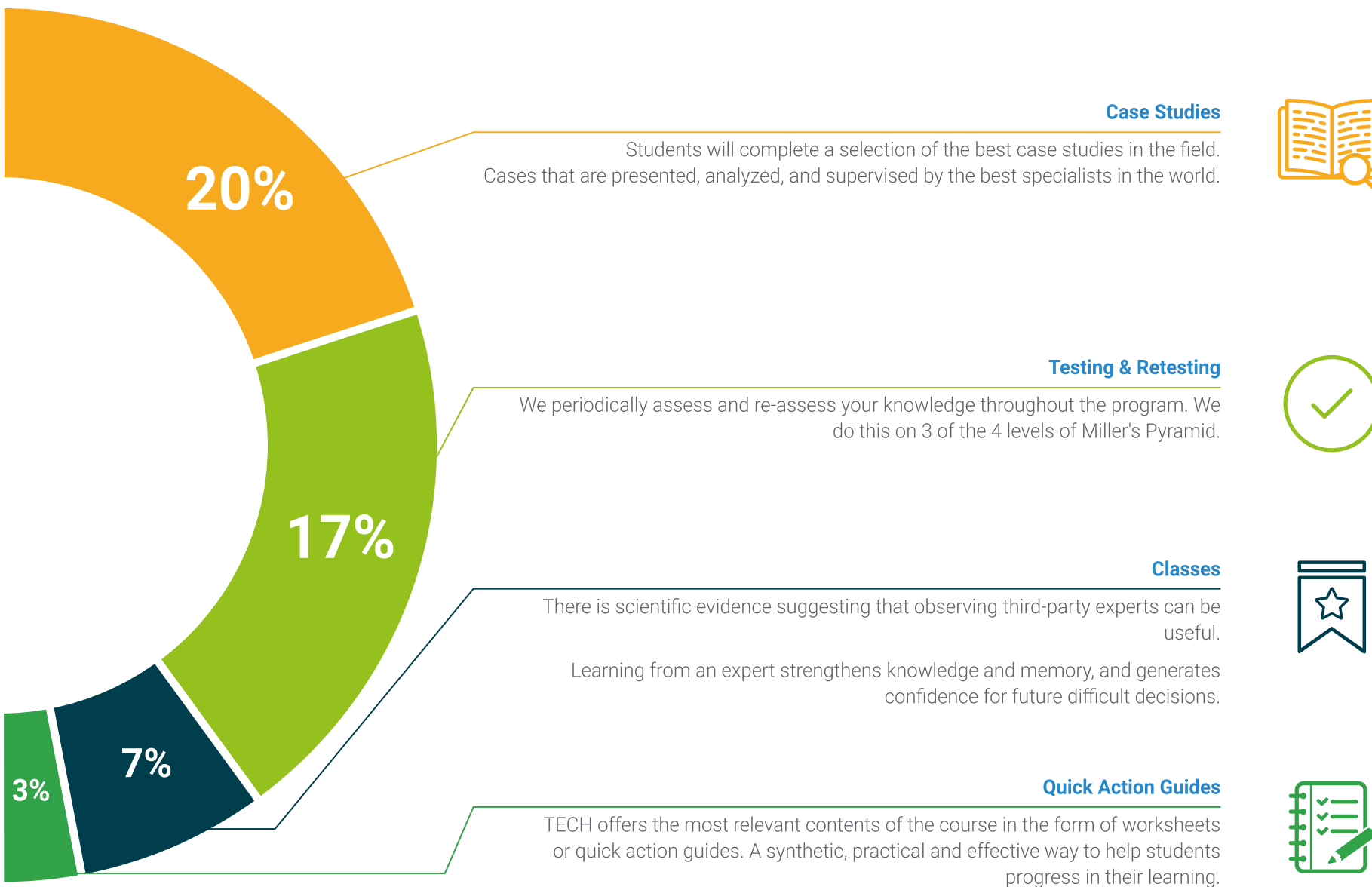


#### Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.







# 06 Certificate

The Postgraduate Certificate in Magnetotherapy in Physical Activity and Sport guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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

This private qualification will allow you to obtain a **Postgraduate Certificate in Magnetotherapy in Physical Activity and Sport** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** private qualification is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Magnetotherapy in Physical Activity and Sport**

Modality: **online**

Duration: **6 Weeks**

Accreditation: **5 ECTS**





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