

Postgraduate Certificate

Invasive Application of Electrical Current in Physical Activity and Sports

Endorsed by the NBA





Postgraduate Certificate

Invasive Application of Electrical Current in Physical Activity and Sports

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/us/sports-science/postgraduate-certificate/invasive-application-electrical-current-physical-activity-sports

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01

Introduction

The invasive application of electrical current in injured athletes is a relatively new technique, yet one that has already achieved significant therapeutic benefits. For this reason, we present to you this academic program, which provides the most up-to-date knowledge in the field, guided by distinguished professionals. Its objective is to equip you with advanced training that will enhance your daily professional practice.





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Discover the benefits of the invasive application of electrical current and incorporate it into your practice to achieve better outcomes for injured athletes”

At TECH, we invite you to undertake this Postgraduate Certificate in Invasive Application of Electrical Current in Physical Activity and Sports, through which you will acquire advanced expertise in this field—training that will help you achieve professional success while improving the condition of athletes suffering from discomfort or injury.

In recent years, research on electrotherapy and its various techniques has significantly increased. Among the most noteworthy are percutaneous analgesic techniques, which use needles as electrodes, as well as transcranial stimulation, whether electrical or magnetic. These advanced applications have broadened the scope of electrotherapy, making it applicable to diverse populations, ranging from individuals with chronic pain to patients with neurological conditions.

The benefits of these invasive techniques are enhanced by the direct placement of needles at the source of pain, enabling rapid intervention in the damaged tissue. For this reason, their use is increasingly widespread, dramatically accelerating recovery in injured patients.

One of the greatest advantages of this program is its 100% online format, which allows participants to decide when and where to study— without the constraints of fixed schedules or the need to travel to a physical location. This flexible design aims to make postgraduate study more accessible to professionals who must balance their specialization with other daily responsibilities.

This **Postgraduate Certificate in Invasive Application of Electrical Current in Physical Activity and Sports** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ The development of case studies presented by experts in electrotherapy
- ♦ 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
- ♦ New insights into the role of sports science professionals in the application of electrotherapy
- ♦ 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



Immerse yourself in this high-level program and enhance your skills as a sports professional”

“

Specialize with us and strengthen your expertise in the invasive application of electrical current. This advanced qualification will enable you to improve your daily professional practice”

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. To achieve this, participants will have access to an innovative system of interactive video lectures developed by renowned experts in invasive current application, all of whom bring extensive professional experience.

This program offers specialization in simulated environments, which provides an immersive learning experience designed to prepare for real-life situations.

This 100% online program will allow you to balance your studies with your professional commitments while expanding your knowledge in this specialized field.



02 Objectives

The Program in Invasive Application of Electrical Current in Physical Activity and Sports is designed to support sports science professionals in their daily practice, particularly in situations where the application of electrotherapy is required.



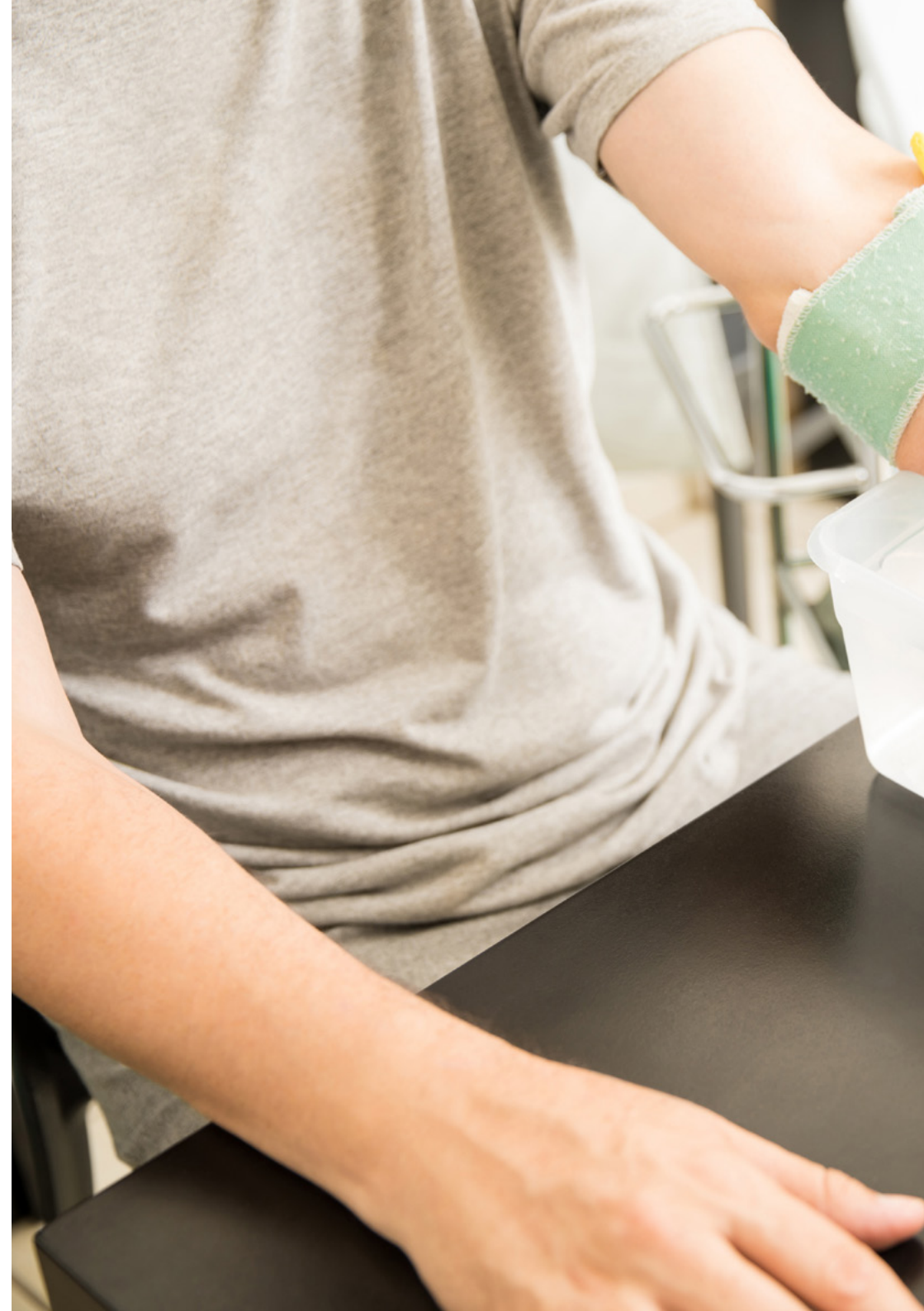
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This program aims to help you update your knowledge of electrotherapy through the use of the latest educational technology, enabling you to contribute with quality and safety to decision-making in this innovative field”



General Objectives

- ♦ Gain up-to-date 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
- ♦ Foster the acquisition of technical skills and abilities, through a powerful audiovisual system, and the possibility of development through online simulation workshops and/or specific specialization
- ♦ Encourage professional motivation through continuing education and research





Specific Objectives

- ♦ Broaden your knowledge of new high frequency applications in the rehabilitation of neuromusculoskeletal pathologies.
- ♦ Apply the physical principles of infrared thermography focused on conducting terrain analyses, based on surface temperature

“

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 recent updates in the field that will allow you to train and increase your skills in this sector.





“

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

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
- ♦ University Course in Physiotherapy from the Alfonso X el Sabio University
- ♦ Member and training coordinator at the Institute of Neuroscience and Movement Sciences

Teachers

Dr. Suso Martí, Luis

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

Mr. Losana Ferrer, Alejandro

- ♦ Clinical Physiotherapist and Trainer in New Technologies for Rehabilitation at Rebiotex
- ♦ Physiotherapist at CEMTRO Clinic
- ♦ 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

Ms. Merayo Fernández, Lucía

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

Dr. Cuenca - Martínez, Ferrán

- ♦ Physiotherapist Expert in Pain Management
- ♦ Physiotherapist at FisioCranioClinic
- ♦ 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
- ♦ Doctor of 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

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
- ♦ Bachelor's Degree in Physiotherapy from the University of León
- ♦ Degree in Psychology from the National University of Distance Education (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

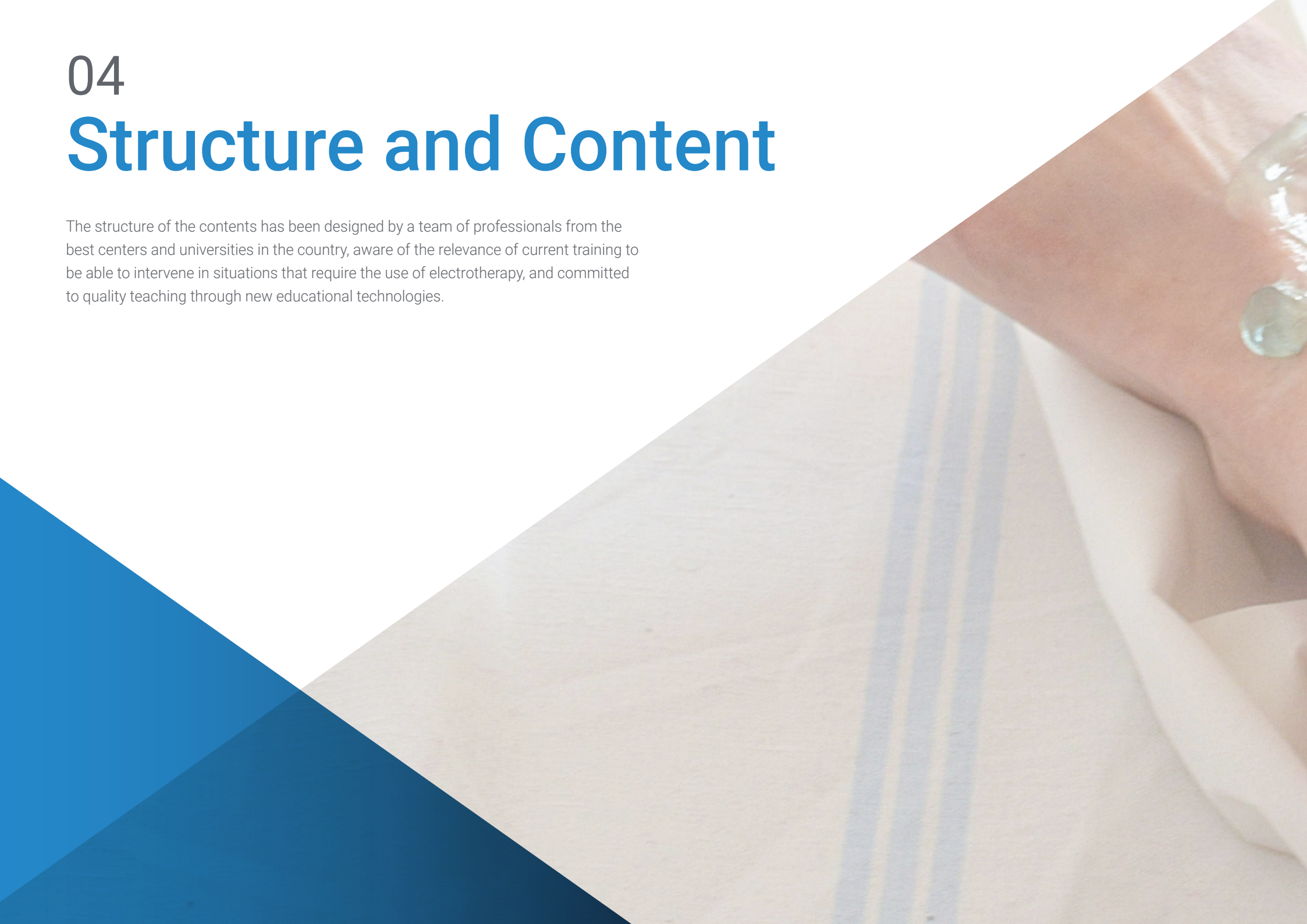


Our teaching team will provide you with all their knowledge so that you are up to date with the latest information on the subject”

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.



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We have the most complete and up-to-date scientific program on the market. We want to provide you with the best specialization”

Module 1. Invasive Application of Current

- 1.1. Invasive Treatment in Physical Therapy for Analgesic Purposes
 - 1.1.1. General Overview
 - 1.1.2. Types of Invasive Treatment
 - 1.1.3. Infiltration Versus Puncture
- 1.2. Fundamentals of Dry Needling
 - 1.2.1. Myofascial Pain Syndrome
 - 1.2.2. Myofascial Trigger Points
 - 1.2.3. Neurophysiology of Myofascial Pain Syndrome and Trigger Points
- 1.3. Post-puncture Treatments
 - 1.3.1. Adverse Effects of Dry Needling
 - 1.3.2. Post-puncture Treatments
 - 1.3.3. Combination of Dry Needling and TENS
- 1.4. Electrotherapy as an Adjunct to Dry Needling
 - 1.4.1. Non-Invasive Approach
 - 1.4.2. Invasive Approach
 - 1.4.3. Types of Electropuncture
- 1.5. Percutaneous Electrical Nerve Stimulation: PENS
 - 1.5.1. Neurophysiological Fundamentals of PENS Application
 - 1.5.2. Scientific Evidence for the Application of PENS
 - 1.5.3. General Considerations for PENS Implementation
- 1.6. Advantages of PENS Over PENS
 - 1.6.1. Current Status of PENS Implementation
 - 1.6.2. Application of PENS in Lower Back Pain
 - 1.6.3. Application of PENS in Other Regions and Pathologies
- 1.7. Use of Electrodes
 - 1.7.1. General Information on the Application of Electrodes
 - 1.7.2. Variants in the Application of Electrodes
 - 1.7.3. Multipole Application



- 1.8. Practical Applications
 - 1.8.1. Justification for the Implementation of the PENS
 - 1.8.2. Applications in Lower Back Pain
 - 1.8.3. Upper Quadrant and Lower Limb Applications
- 1.9. Contraindications
 - 1.9.1. Contraindications Derived from TENS
 - 1.9.2. Contraindications Derived from Dry Needling
 - 1.9.3. General Considerations
- 1.10. Invasive Treatments for Regenerative Purposes
 - 1.10.1. Introduction
 - 1.10.1.1. Electrolysis Concept
 - 1.10.2. Intratissue Percutaneous Electrolysis
 - 1.10.2.1. Concept
 - 1.10.2.2. Effects
 - 1.10.2.3. State-of-the-Art Review
 - 1.10.2.4. Combination with Eccentric Exercises
- 1.11. Physical Principles of Galvanism
 - 1.11.1. Introduction
 - 1.11.1.1. Physical Characteristics of Direct Current
 - 1.11.2. Galvanic Current
 - 1.11.2.1. Physical Characteristics of Galvanic Current
 - 1.11.2.2. Chemical Phenomena of Galvanic Current
 - 1.11.2.3. Structure
 - 1.11.3. Iontophoresis
 - 1.11.3.1. Leduc's Experiment
 - 1.11.3.2. Physical Properties of Iontophoresis
- 1.12. Physiological Effects of Galvanic Current
 - 1.12.1. Physiological Effects of Galvanic Current
 - 1.12.2. Electrochemical Effects
 - 1.12.2.1. Chemical Behavior
 - 1.12.3. Electrothermal Effects
 - 1.12.4. Electrophysical Effects
- 1.13. Therapeutic Effects of Galvanic Current
 - 1.13.1. Clinical Application of Galvanic Current
 - 1.13.1.1. Vasomotor Action
 - 1.13.1.2. Effect on the Nervous System
 - 1.13.2. Therapeutic Effects of Iontophoresis
 - 1.13.2.1. Penetration and Elimination of Cations and Anions
 - 1.13.2.2. Drugs and Indications
 - 1.13.3. Therapeutic Effects of Intratissue Percutaneous Electrolysis
- 1.14. Types of Percutaneous Application of Galvanic Currents
 - 1.14.1. Introduction to Application Techniques
 - 1.14.1.1. Classification According to Electrode Placement
 - 1.14.1.1.1. Direct Galvanizing
 - 1.14.2. Indirect Galvanizing
 - 1.14.3. Classification According to the Technique Applied
 - 1.14.3.1. Intratissue Percutaneous Electrolysis
 - 1.14.3.2. Iontophoresis
 - 1.14.3.3. Galvanic Bath
- 1.15. Application Protocols
 - 1.15.1. Galvanic Current Application Protocols
 - 1.15.2. Intratissue Percutaneous Electrolysis Application Protocols
 - 1.15.2.1. Procedure
 - 1.15.3. Iontophoresis Application Protocols
 - 1.15.3.1. Procedure
- 1.16. Contraindications
 - 1.16.1. Contraindications of Galvanic Current
 - 1.16.2. Contraindications, Complications and Precautions of Galvanic Current

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.



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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.

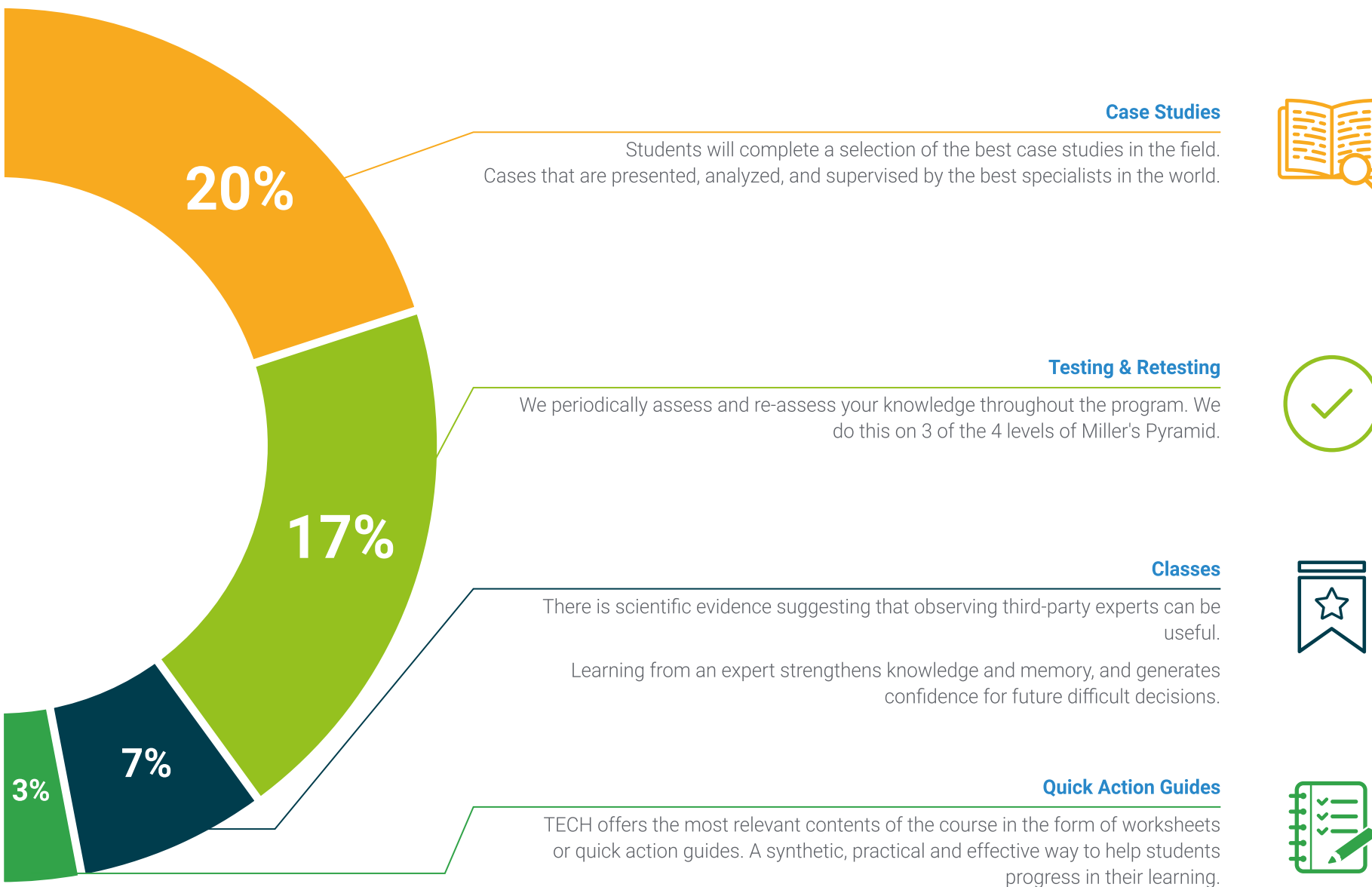
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



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 Invasive Application of Electrical Current in Physical Activity and Sports guarantees students, in addition to the most rigorous and up-to-date education, access to a diploma for the Postgraduate Certificate issued by TECH Global University.



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

This private qualification will allow you to obtain a diploma for the **Postgraduate Certificate in Invasive Application of Electrical Current in Physical Activity and Sports** 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.

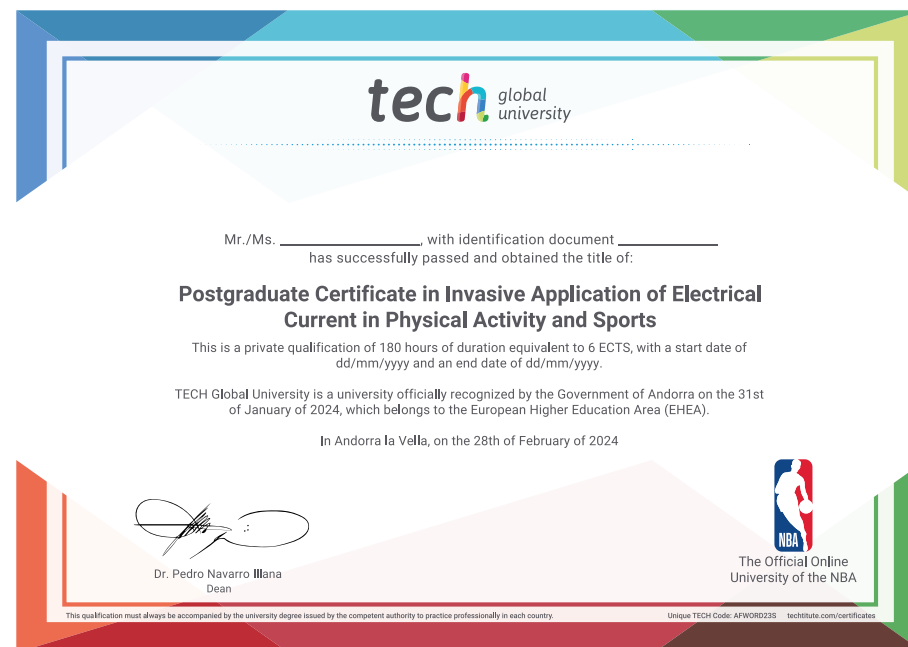
This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Invasive Application of Electrical Current in Physical Activity and Sports**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





Postgraduate Certificate
Invasive Application
of Electrical Current in
Physical Activity and Sports

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