



Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport

» Modality: online

» Duration: 6 months.

» Certificate: TECH Global University

» Accreditation: 19 ECTS

» Schedule: at your own pace

» Exams: online

Website: www.techtitute.com/us/sports-science/postgraduate-diploma/postgraduate-diploma-application-electrotherapy-neurological-patient-physical-activity-sport

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Certificate

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tech 06 | Introduction to the Program

Electromagnetic fields have been used as a therapeutic tool since ancient times. However, since the end of the last century, there have been notable advances in the use of different currents. 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.

Electrotheraphy has a wide range of applications, so it is essential to possess extensive knowledge of both the physiological functioning of the subject, as well as the most appropriate agent in each case. This content covers everything from muscular contraction mechanisms to somatosensory transmission mechanisms, which makes it essential for the therapist to know both the pathophysiological mechanisms of the subject and the physical/chemical principles of Electrotherapy.

In recent years, the number of research studies related to electrotherapy has increased, mainly those focused on invasive techniques. These include percutaneous analgesic techniques in which needles are used as electrodes as well as transcranial stimulation, either of an electrical nature or by using magnetic fields. Based on latter application, the field of action of Electrotherapy has been widened and can thereby be applied to various types of patients, ranging from subjects with chronic pain to neurological patients.

The objective of the Postgraduate Diploma is to present up-to-date applications of Electrotherapy in neuromusculoskeletal pathologies, always based on scientific evidence when selecting the most appropriate type of current in each case. To this end, the neurophysiological principles of each type of current are presented at the beginning of each module so that learning is complete. Each module is supported by practical applications of each type of current, in order to provide the professional with comprehensive knowledge of the pathology and how it can be treated.

Given the up-to-date content of the Postgraduate Diploma, its orientation is open to health professionals, in this way broadening the application of electrotherapy beyond the field of physiotherapy.

The Postgraduate Diploma in the Application of Electrotherapy in Neurological Patients in Physical Activity and Sport contains the most complete and up-to-date scientific program on the market. The most important features of the program include:

- Development of practical cases presented by experts in the Application of Electrotherapy in Neurological Patients in Physical Activity and Sport.
- 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.
- Latest developments on the Application of Electrotherapy in Neurological Patients in Physical Activity and Sport.
- It contains practical exercises where the self-evaluation process can be carried out to improve learning.
- With a special focus on innovative methodologies in the Application of Electrotherapy in Neurological Patients in Physical Activity and Sport.
- All this will be complemented by 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.



Introduction to the Program | 07 tech



This diploma may be the best investment you can make when choosing a professional development program for two reasons: not only will it bring your knowledge of Electrotherapy in Neurological Patients in Physical Activity and Sport up to date, but you will also receive a university expert qualification from TECH Global University"

The teaching staff includes professionals from the field of Electrotherapy in Neurological Patients in Physical Activity and Sport, who bring their real-world experience into the training, as well as recognized specialists from leading societies and prestigious universities.

Thanks to its multimedia content, developed with the latest educational technology, professionals will benefit from situated and contextual learning—simulated environments designed to provide immersive learning experiences that prepare them for real-life situations.

This program is designed around Problem-Based Learning, whereby the student must try to solve the different professional practice situations that arise during the course. To achieve this, the student will have the support of an innovative interactive video system created by recognized experts in the field of physiotherapeutic approaches in the Application of Electrotherapy in Neurological Patients in Physical Activity and Sport, with extensive teaching experience.

Increase your decision-making confidence by updating your knowledge through this specialist course.

Take advantage of the opportunity to learn about the latest advancements in the Application of Electrotherapy in Neurological Patients in Physical Activity and Sport and improve your patient care.







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General Objective

- Update the knowledge of rehabilitation professionals in the field of electrotherapy
- Promote work strategies based on a comprehensive approach to patient care as a reference model for achieving excellence in healthcare
- Foster the development of technical skills and competencies through a powerful audiovisual system and opportunities for hands-on learning via online simulation workshops and/or specialized training
- Encourage professional growth through continuing education and research



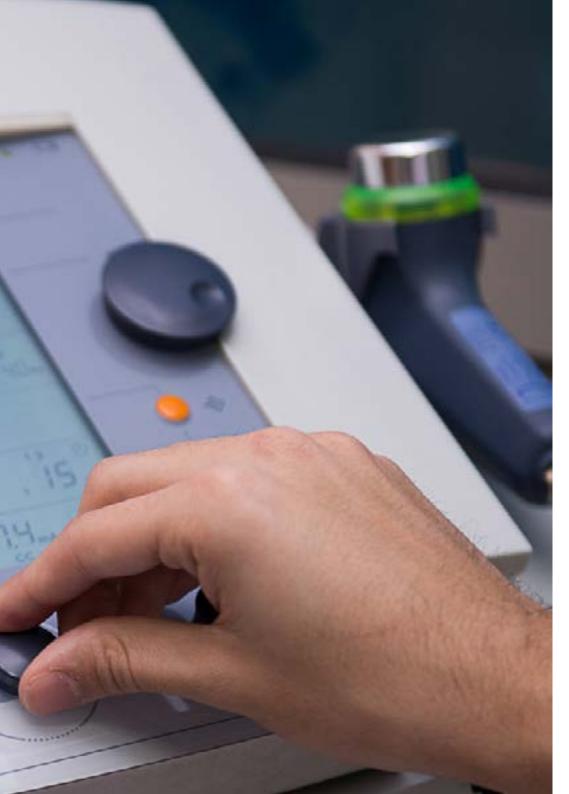


Specific Objectives

- Update your knowledge of Electrotherapy in the field of rehabilitation of patients with musculoskeletal pathology.
- Update your knowledge of muscular contraction and its rehabilitation by physical means, applying electrotherapy as the main agent.
- Update your knowledge of current and developing therapeutic possibilities in the field of neuromusculoskeletal rehabilitation.
- Expand knowledge of new applications of ultrasound therapy in the rehabilitation of neuromusculoskeletal pathologies



Take advantage of the opportunity and take the step to stay up to date with the latest advancements in the Application of Electrotherapy in Neurological Patients in Physical Activity and Sport"







Guest Directors



Ms. Sanz Sánchez, Marta

- Physiotherapy Supervisor at the 12 de Octubre University Hospital
- Graduate in Physiotherapy from the School of Nursing and Physiotherapy of the University of Comillas.
- Degree in Physiotherapy from the School of Nursing and Physiotherapy of the University of Alcalá de Henares.
- Associate Professor at the Complutense University of Madrid



Mr. Hernández, Leonardo

- Supervisor of the Rehabilitation Service Unit of the 12 de Octubre University Hospital, Gimbernat University Schoo
- Physiotherapist at the University Hospital of Guadalajara
- Diploma in Physiotherapy from the European University of Madrid
- Degree in Physiotherapy from Comillas Pontifical University
- Master's Degree in Osteopathy by Gimbernat University School

Management



Dr. León Hernández, José 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

Faculty

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

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- 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

Mr. 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

Dr. Gurdiel Álvarez, Francisco

- Physiotherapist at Powerexplosive
- Physiotherapist at Fisad Clinic
- Physiotherapist for Ponferradina Sports Society
- Doctor in Health Sciences from the Rey Juan Carlos University
- Bachelor's Degree in Physiotherapy from the University of León
- Bachelor's Degree in Psychology from the National University of Distance Education (UNED)
- Master's Degree 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

Mr. Izquierdo García, Juan

- Physiotherapist at the Cardiac Rehabilitation Unit of the 12 de Octubre University Hospital
- Diploma in Physiotherapy from the Rey Juan Carlos University
- · University Specialist in Heart Failure by the University of Murcia.
- Master's Degree in Health Care Management from the University of the Mid-Atlantic
- Expert in Manual Therapy in Muscular and Neuromeningeal Tissue by the Universidad Rey Juan Carlos
- Member of: Multidisciplinary Cardiac Rehabilitation Unit of the 12 de Octubre University Hospital



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Mr. Román Moraleda, Carlos

- Physiotherapist and Osteopath
- Physiotherapist at La Paz University Hospital
- Physiotherapist in Paris Public Hospitals
- Physiotherapist in Primary Care for the Madrid Health Service.
- University Expert in Lymphatic Drainage and Complex Decompressive Physiotherapy



A unique, essential and decisive learning experience to boost your professional development"





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Module 1. High-Frequency Electrotherapy

- 1.1. Physical Fundamentals of High Frequency
- 1.2. Physiological Effects of High Frequency
 - 1.2.1. Athermal Effects
 - 1.2.2. Thermal Effects
- 1.3. Therapeutic Effects of High Frequency
 - 1.3.1. Athermal Effects
 - 1.3.2. Thermal Effects
- 1.4. Shortwave Fundamentals
 - 1.4.1. Short Wave: Capacitive Application Mode
 - 1.4.2. Short Wave: Inductive Application Mode
 - 1.4.3. Short Wave: Pulsed Emission Mode
- 1.5. Practical Applications of Shortwave
 - 1.5.1. Practical Applications of Continuous Shortwave
 - 1.5.2. Practical Applications of Pulsed Shortwave
 - .5.3. Practical Applications of Shortwave: Pathology Phase and Protocols
- 1.6. Contraindications of Shortwave
 - 1.6.1. Absolute Contraindications
 - 1.6.2. Relative Contraindications
 - 1.6.3. Precautions and Safety Measures
- 1.7. Practical Applications of the Microwave
 - 1.7.1. Microwave Basics
 - 1.7.2 Practical Microwave Considerations
 - 1.7.3. Practical Applications of Continuous Microwave
 - 1.7.4. Practical Applications of Pulsed Microwave
 - 1.7.5. Microwave Treatment Protocols
- 1.8. Contraindications of the Microwave
 - 1.8.1. Absolute Contraindications
 - 1.8.2. Relative Contraindications
- 1.9. Fundamentals of Techartherapy
 - 1.9.1. Physiological Effects of Techarterapy
 - 1.9.2. Dosage of Tecartherapy Treatment

- 1.10. Practical Applications of Techartherapy
 - 1.10.1. Arthrosis
 - 1.10.2. Myalgia
 - 1.10.3. Muscle Fibrillar Rupture.
 - 1.10.4. Post-puncture Pain of Myofascial Trigger Points.
 - 1.10.5. Tendinopathy
 - 1.10.6. Tendon Rupture (Post-Surgical Period).
 - 1.10.7. Wound Healing
 - 1.10.8. Keloid Scars
 - 1.10.9. Edema Drainage
 - 1.10.10. Post-Exercise Recovery
- 1.11. Contraindications of Techartherapy
 - 1.11.1. Absolute Contraindications
 - 1.11.2. Relative Contraindications

Module 2. Electrostimulation in Neurological Patients

- 2.1. Assessment of Nerve Injury. Principles of Muscle Innervation.
- 2.2. Intensity/Time (I/T) and Amplitude/Time (A/T) Curves
- 2.3. Main Trends in Neurological Rehabilitation
- 2.4. Electrotherapy for Motor Rehabilitation in the Neurological Patient
- 2.5. Electrotherapy for Somatosensory Rehabilitation in the Neurologic Patient
- 2.6. Practical Applications
- 2.7. Contraindications



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Module 3. General Principles of Electrotherapy

- 3.1. Physical Basis of Electric Current
 - 3.1.1. Brief Historical Recollection
 - 3.1.2. Definition and Physical Basis of Electrotherapy 3.1.2.1. Potential Concepts
- 3.2. Main Parameters of the Electric Current
 - 3.2.1. Pharmacology / Electrotherapy Parallelism
 - 3.2.2. Main Parameters of the Waves: Waveform, Frequency, Intensity, and Pulse Width
 - 3.2.3. Other Concepts: Voltage, Current and Resistance
- 3.3. Frequency-Dependent Classification of Currents
 - 3.3.1. Classification according to Frequency: High, Medium and Low
 - 3.3.2. Properties of Each Type of Frequency
 - 3.3.3. Choice of the Most Suitable Current in Each Case
- 3.4. Waveform-Dependent Current Classification
 - 3.4.1. General Classification: Direct and Alternating or Variable currents
 - 3.4.2. Classification of the Variable Currents: Interrupted and Uninterrupted
 - 3.4.3. Spectrum Concept
- 3.5. Current Transmission: Electrodes
 - 3.5.1. General Information on Electrodes
 - 3.5.2. Importance of Tissue Impedance
 - 3.5.3. General Precautions
- 3.6. Types of Electrodes
 - 3.6.1. Brief Recollection of the Historical Evolution of Electrodes
 - 3.6.2. Considerations on Maintenance and Use of Electrodes
 - 3.6.3. Main Types of Electrodes
 - 3.6.4. Electrophoretic Application
- 8.7. Bipolar Application
 - 3.7.1. Bipolar Application Overview
 - 3.7.2. Electrode Size and Area to be Treated
 - 3.7.3. Application of More Than Two Electrodes

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- 3.8. Four-pole Application
 - 3.8.1. Possibility of Combinations
 - 3.8.2. Application in Electrostimulation
 - 3.8.3. Tetrapolar Application in Interferential Currents
 - 3.8.4. General Conclusions
- 3.9. Importance of Polarity Alternation
 - 3.9.1. Brief Introduction to Galvanism
 - 3.9.2. Risks Derived from Load Accumulation
 - 3.9.3. Polar Behavior of Electromagnetic Radiation

Module 4. Non-Invasive Brain Stimulation

- 4.1. Introduction to Transcranial Neuromodulation
 - 4.1.1. Neurophysiological Principles
 - 4.1.2. General Information of Non-Invasive Brain Stimulation
- 4.2. Transcranial Magnetic Stimulation
 - 4.2.1. Introduction to Transcranial Magnetic Stimulation
 - 4.2.2. Mechanisms of Action
- 4.3. Stimulation Protocols
 - 4.3.1. Safety
 - 4.3.2. Applications
- 4.4. Transcranial Direct Current
 - 4.4.1. Introduction to Transcranial Direct Current
 - 4.4.2. Mechanism of Action
 - 4.4.3. Safety
- 4.5. Procedures
 - 4.5.1. General Aspects
 - 4.5.2. Evidence
 - 4.5.3. Applications





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- 4.6. Other Forms of Transcranial Electrical Stimulation
 - 4.6.1. General Aspects
 - 4.6.2. Updating of Applications
- 4.7. Transcranial Neuromodulation Combined with other Therapeutic Interventions
 - 4.7.1. Combination Types
 - 4.7.2. Applications
 - 4.7.3. Precautions



A unique, essential, and decisive learning experience to enhance your professional development"



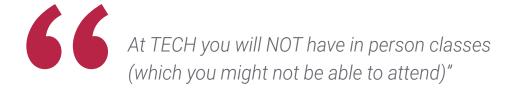


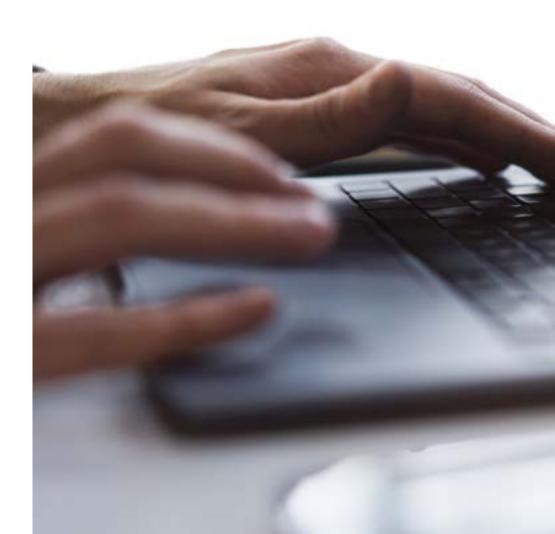
The student: the priority of all TECH programs

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

The pedagogical 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 the student who chooses the time they spend studying, 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 attend live classes, which many times they cannot attend. The learning activities will be done when it is convenient for them. You will always be able to decide when and from where to study.









The most comprehensive academic programs worldwide

TECH is distinguished by offering the most complete academic pathways within the higher education landscape. This level of comprehensiveness is achieved through the development of curricula that not only encompass essential knowledge but also integrate the latest innovations in each area of study.

By being constantly updated, 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 preparation that provides them with a notable competitive advantage to advance in 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 smartphone wherever you want, whenever you want and for as long as you want"

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Case Studies or Case Method

The case method has been the learning system most used by the best business schools in the world. 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 solve them. In 1924 it was established as a standard teaching method at Harvard.

With this teaching model, it is the student who builds their professional competence through strategies such as Learning by Doing or Design Thinking, which are 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, argue 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.



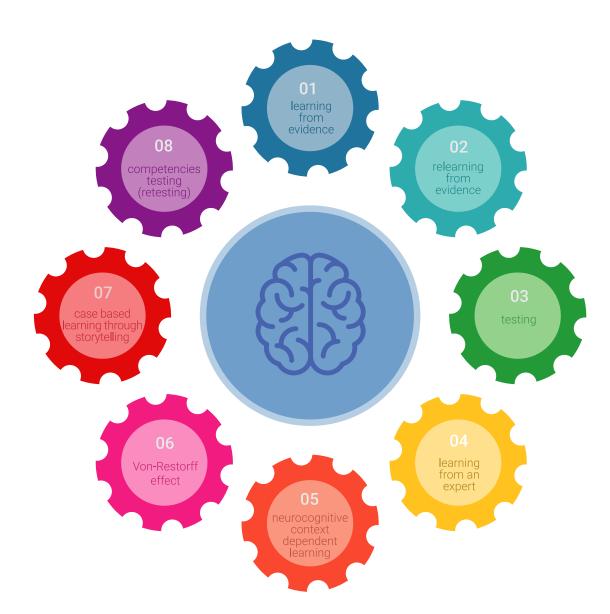
Relearning Method

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, they are able to review and reiterate the key concepts of each subject and learn to apply them in a real environment.

Along the same lines, and according to multiple scientific researches, repetition 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 more performance, involving you more in your specialization, developing a critical spirit, defending arguments and contrasting opinions: a direct equation to success.





A 100% online Virtual Campus with the best teaching resources

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 reiteration, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neurosciences 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 for long-term retention. This is a model called Neurocognitive Context-Dependent E-Learning that is consciously applied in this university program.

Furthermore, in order to maximize tutor-student contact, a wide range of communication possibilities are provided, both in real time and deferred (internal messaging, discussion forums, telephone answering service, e-mail contact with the technical secretary, chat and videoconferencing).

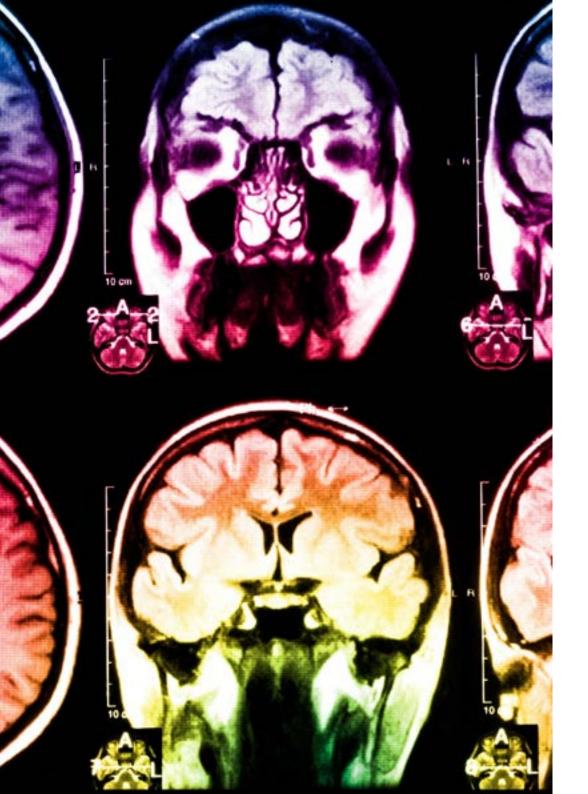
Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, in accordance with their accelerated professional updating.



The online mode of study of this program will allow you to organize your time and your 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 best rated by its students

The results of this innovative academic 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 has become 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 up to date with the technological and pedagogical vanguard.

You will be able to learn with the advantages of access to simulated learning environments and the learning by observation approach, that is, the "Learning from an Expert" approach.

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Therefore, 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

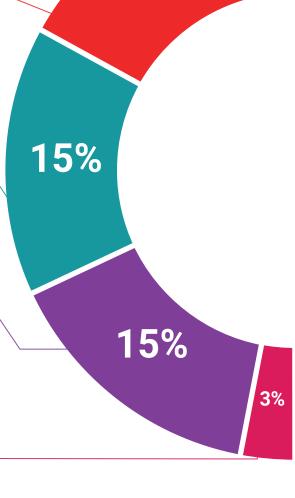
You will carry out activities to develop specific skills and abilities in each thematic area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the context of the globalization in which we live.



Interactive Summaries

We present the contents in an attractive and dynamic way in multimedia pills that include audio, videos, images, diagrams and concept maps in order to reinforce knowledge.

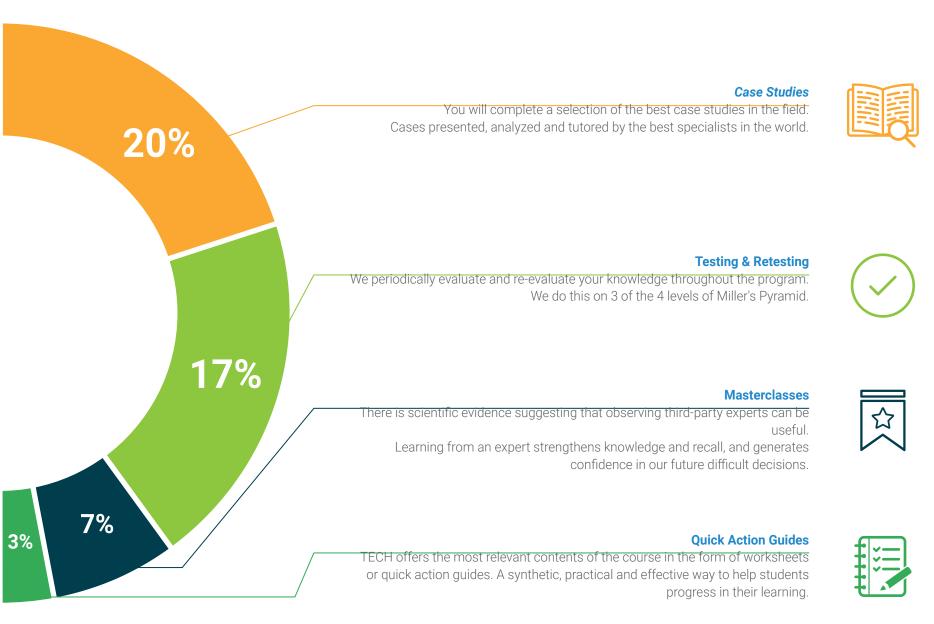
This unique educational system for the presentation of multimedia content was awarded by Microsoft as "Successful Case in Europe."





Additional Reading

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







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This private qualification will allow you to obtain a diploma for the **Postgraduate Diploma in Application of Electrotherapy in the Neurological Patient 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 private qualification from **TECH Global University** is a European continuing education and professional development program that guarantees the acquisition of competencies in its area of expertise, providing significant curricular value to the student who successfully completes the program.

Title: Postgraduate Diploma in Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport

Modality: online

Duration: 6 months.

Accreditation: 19 ECTS



Mr./Ms. _____, with identification document ____ has successfully passed and obtained the title of:

Postgraduate Diploma in Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport

This is a private qualification of 570 hours of duration equivalent to 19 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024



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Postgraduate Diploma

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