

Postgraduate Certificate

Electrostimulation for Muscle Strengthening in Rehabilitation Medicine

Endorsed by the NBA





Postgraduate Certificate

Electrostimulation for Muscle Strengthening in Rehabilitation Medicine

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 5 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/sports-science/postgraduate-certificate/electrostimulation-muscle-strengthening-rehabilitation-medicine

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01

Introduction

Electrotherapy is a branch of rehabilitation medicine that relies on the application of electromagnetic fields to treat various pathologies. Its use ranges from generating analgesia to stimulating nerve fibers, and even modulating the activity of different brain areas.



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This Postgraduate Certificate in Electrostimulation for Muscle Strengthening in Rehabilitation Medicine, will provide you with a sense of confidence in performing your profession, helping you grow both personally and professionally”

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 has experienced a great advance. 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.

The field of electrotherapy is vast, requiring extensive knowledge of both the physiological functioning of the body and the most appropriate agent for each case. This knowledge spans from the mechanisms of muscle contraction to somatosensory transmission mechanisms, making it essential for rehabilitation physicians to understand both the pathophysiological mechanisms of the patient 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. Among them, percutaneous analgesic techniques stand out, in which needles are used as electrodes, as well as transcranial stimulation, either electrical or using magnetic fields. Based on these recent applications, the field of electrotherapy is expanding and can now be applied to various types of populations, from individuals with chronic pain to neurological patients.

The goal of the Postgraduate Certificate in Electrostimulation for Muscle Strengthening in Rehabilitation Medicine is to present updated applications of electrotherapy in neuromusculoskeletal pathologies, always based on scientific evidence when selecting the most appropriate type of current for each case. To achieve this, the neurophysiological foundations of each type of current are presented at the beginning of each module, ensuring comprehensive learning. Each module is supported by practical applications of each type of current, so that the integration of the knowledge of the pathology and its treatment is complete.

Given the updated content of this Postgraduate Certificate in Electrostimulation for Muscle Strengthening in Rehabilitation Medicine, its scope extends to various healthcare professionals, broadening the application of electrotherapy beyond the field of rehabilitation medicine.

This **Postgraduate Certificate in Electrostimulation for Muscle Strengthening in Rehabilitation Medicine** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ The development of practical cases presented by experts in Electrostimulation for Muscle Strengthening. Its graphical, schematic, and highly practical content provides scientific and practical information on the disciplines essential for professional practice
- ♦ The latest developments in Electrostimulation for Muscle Strengthening
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning
- ♦ A special emphasis on innovative methodologies in Electrostimulation for Muscle Strengthening
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



*Update your knowledge
through the Postgraduate
Certificate in Electrostimulation
for Muscle Strengthening in
Rehabilitation Medicine"*

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This Postgraduate Certificate could be the best investment you can make when selecting an update program for two reasons: in addition to updating your knowledge in Electrostimulation for Muscle Strengthening in Rehabilitation Medicine, you will receive a diploma from TECH Global University”

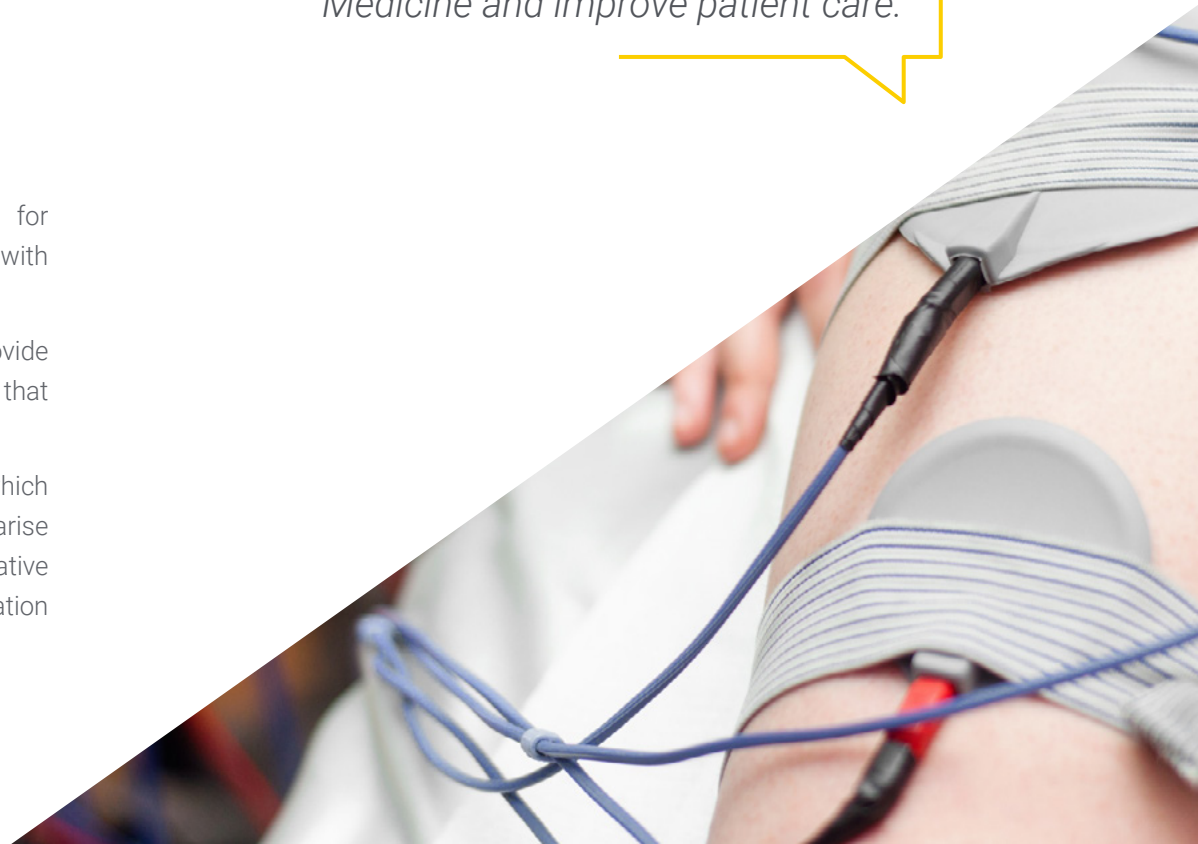
Increase your decision-making confidence by updating your knowledge through this program.

Take advantage of the opportunity to learn the latest advancements in Electrostimulation for Muscle Strengthening in Rehabilitation Medicine and improve patient care.

The teaching staff includes professionals from the field of Electrostimulation for Muscle Strengthening, who bring their real-world experience to this training, along with recognized specialists from leading scientific 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 an immersive program designed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which students must try to solve the different professional practice situations that arise throughout the program. To achieve this, the student will have the support of an innovative interactive video system created by recognized experts in the field of Electrostimulation for Muscle Strengthening, with extensive teaching experience.



02 Objectives

The Postgraduate Certificate in Electrostimulation for Muscle Strengthening in Rehabilitation Medicine is designed to assist the rehabilitation physician in their daily practice related to electrostimulation.



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This Postgraduate Certificate is aimed at helping you update your knowledge in Electrostimulation for Muscle Strengthening in Rehabilitation Medicine using the latest educational technology, contributing with quality and safety to decision-making and the monitoring of your patients”



General Objectives

- Update the knowledge of rehabilitation professionals in the field of electrotherapy
- Promote work strategies based on a comprehensive approach to the patient as a reference model for achieving excellence in care
- Facilitate the acquisition of technical skills and expertise through a powerful audiovisual system, with the opportunity for development through online simulation workshops and/or specific training
- Encourage professional stimulation through continuous education and research





Specific Objective

- ♦ Update knowledge on nociceptive transmission, as well as its modulation mechanisms through physical means

03

Course Management

The program includes a teaching staff of reference specialists in Electrostimulation for Muscle Strengthening in Rehabilitation Medicine, who bring their professional experience to this training. In addition, other renowned specialists participate in the design and development of the program, offering an interdisciplinary approach.





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Learn from leading professionals about the latest advances in procedures in the field of Electrostimulation for Muscle Strengthening in Rehabilitation Medicine”

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
- Diploma 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

Dr. Cuenca Martínez, Ferrán

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

Mr. Gurdíel Álvarez, Francisco

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

Mr. Losana Ferrer, Alejandro

- ♦ Physiotherapist
- ♦ 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

Ms. Merayo Fernández, Lucía

- ♦ Degree in Physiotherapy
- ♦ Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain Management

Dr. Suso Martí, Luis

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

04

Structure and Content

The structure of the content has been designed by a team of professionals from the best educational institutions, universities, and companies across the country, aware of the importance of up-to-date training to effectively intervene in situations requiring muscle strengthening stimulation. They are committed to delivering quality education through new educational technologies.





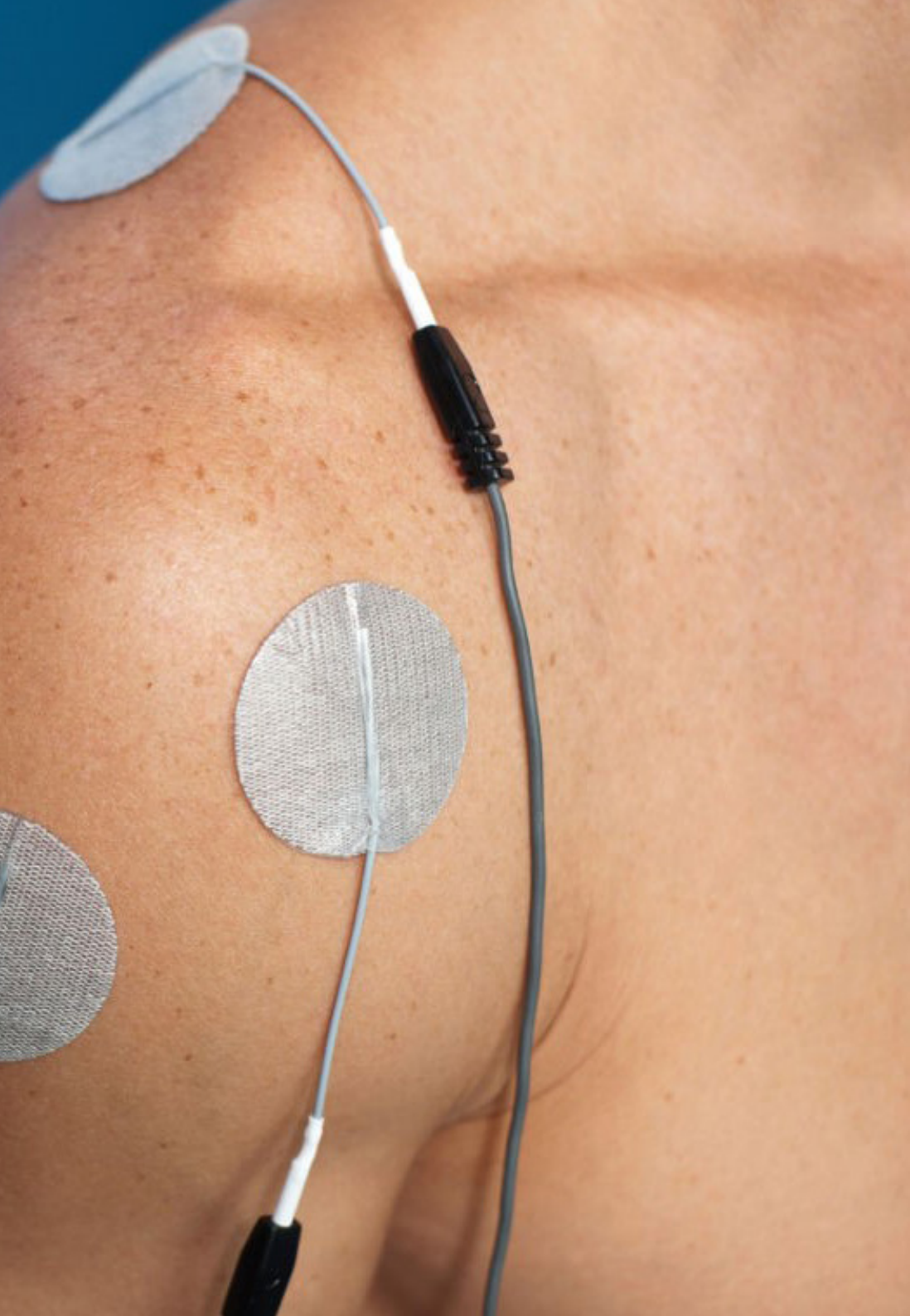
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This Postgraduate Certificate in Electrostimulation for Muscle Strengthening in Rehabilitation Medicine contains the most complete and up-to-date scientific program on the market”

Module 1. Electrostimulation for Muscle Strengthening

- 1.1. Principles of Muscle Contraction
 - 1.1.1. Introduction to Muscle Contraction
 - 1.1.2. Types of Muscles
 - 1.1.3. Muscle Characteristics
 - 1.1.4. Muscle Functions
 - 1.1.5. Neuromuscular Electro Stimulation
- 1.2. Sarcomere Structure
 - 1.2.1. Introduction
 - 1.2.2. Sarcomere Functions
 - 1.2.3. Sarcomere Structure
 - 1.2.4. Sliding Filament Theory
- 1.3. Motor Plate Structure
 - 1.3.1. Motor Unit Concept
 - 1.3.2. Concept of Neuromuscular Junction and Motor Plate
 - 1.3.3. Structure of the Neuromuscular Junction
 - 1.3.4. Neuromuscular Transmission and Muscle Contraction
- 1.4. Type of Muscle Contraction
 - 1.4.1. Concept of Muscle Contraction
 - 1.4.2. Types of Contraction
 - 1.4.3. Isotonic Muscle Contraction
 - 1.4.4. Isometric Muscle Contraction
 - 1.4.5. Relationship between Strength and Endurance in Contractions.
 - 1.4.6. Auxotonic and Isokinetic Contractions
- 1.5. Types of Muscle Fibers
 - 1.5.1. Types of Muscle Fibers
 - 1.5.2. Slow-Twitch Fibers or Type I Fibers
 - 1.5.3. Fast-Twitch Fibers or Type II Fibers
- 1.6. Main Neuromuscular Injuries
 - 1.6.1. Neuromuscular Disease Concept
 - 1.6.2. Etiology of Neuromuscular Diseases
 - 1.6.3. Neuromuscular Junction Injury and NMD
 - 1.6.4. Major Neuromuscular Injuries or Diseases





- 1.7. Principles of Electromyography
 - 1.7.1. Electromyography Concept
 - 1.7.2. Development of Electromyography
 - 1.7.3. Electromyographic Study Protocol
 - 1.7.4. Electromyography Methods
- 1.8. Main Excitomotor Currents. Neo-Faradic Currents
 - 1.8.1. Definition of Excitomotor Current and Main Types of Excitomotor Currents
 - 1.8.2. Factors Influencing the Neuromuscular Response
 - 1.8.3. Excitomotor Currents Most Commonly Used Neo-Faradic Currents
- 1.9. Excitomotor Interferential Currents. Kotz Currents
 - 1.9.1. Kotz Currents or Russian Currents
 - 1.9.2. Most Relevant Parameters in Kotz Currents
 - 1.9.3. Strengthening Protocol Described with Russian Current
 - 1.9.4. Differences between Low Frequency and Medium Frequency Electrostimulation
- 1.10. Electrostimulation Applications in Uro-Gynecologic
 - 1.10.1. Electrostimulation and Urogynecology
 - 1.10.2. Types of Electrostimulation in Urogynecology
 - 1.10.3. Placement of Electrodes
 - 1.10.4. Mechanism of Action
- 1.11. Practical Applications
 - 1.11.1. Recommendations for the Application of Excitomotor currents
 - 1.11.2. Techniques of Application of Excitomorphic Currents
 - 1.11.3. Examples of Work Protocols Described in Scientific Literature
- 1.12. Contraindications
 - 1.12.1. Contraindications for the Use of Electrostimulation for Muscle Strengthening in Rehabilitation Medicine
 - 1.12.2. Recommendations for Safe Electrostimulation Practice

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.

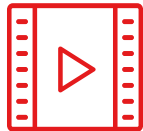
The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

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

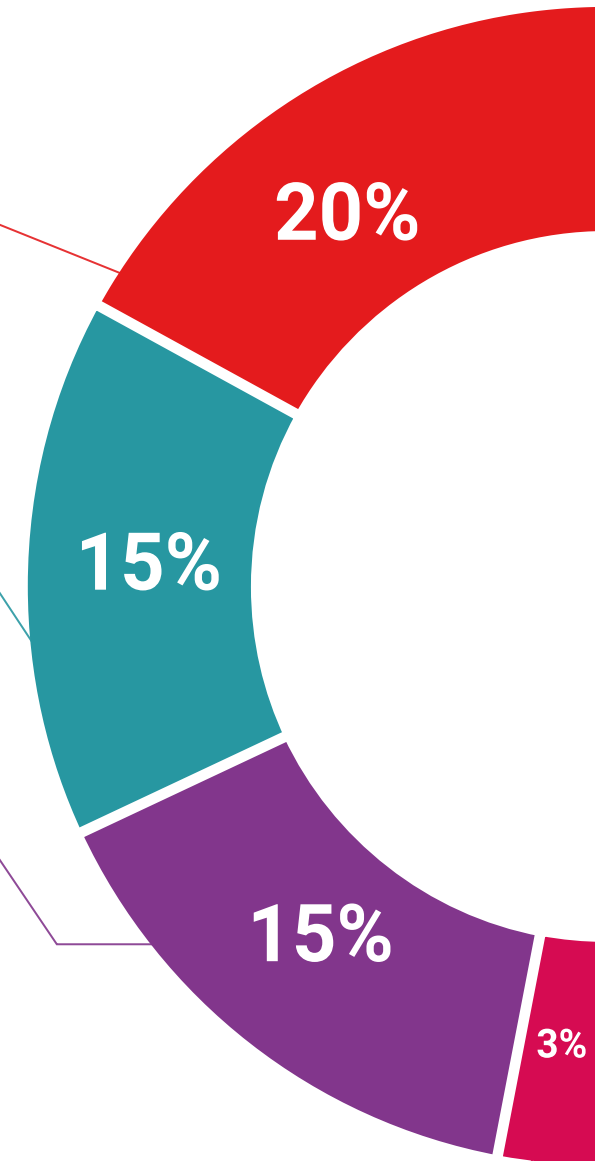
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

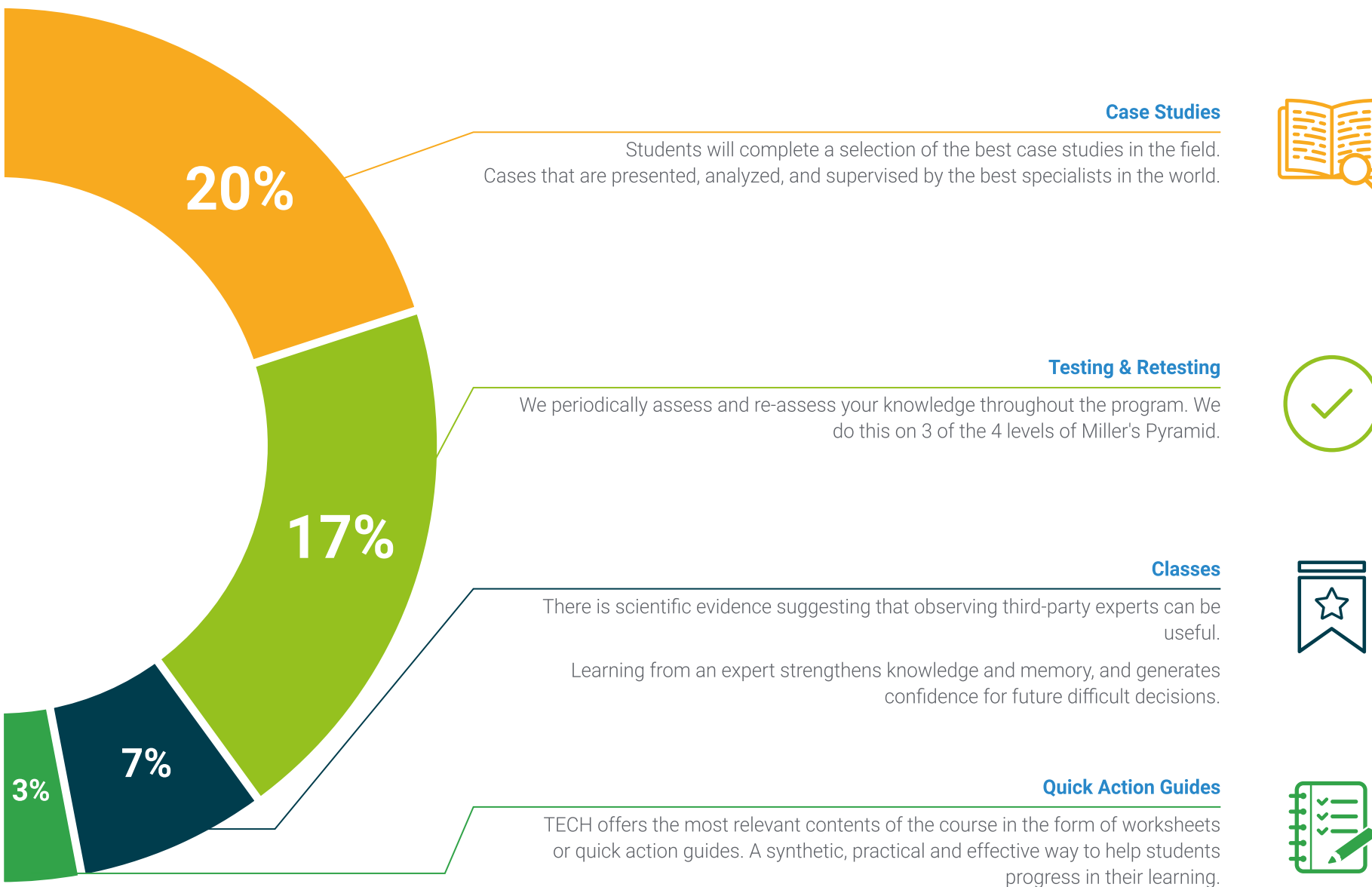
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



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 Electrostimulation for Muscle Strengthening in Rehabilitation Medicine 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 Electrostimulation for Muscle Strengthening in Rehabilitation Medicine** 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 Electrostimulation for Muscle Strengthening in Rehabilitation Medicine**

Modality: **online**

Duration: **6 weeks**

Accreditation: **5 ECTS**





Postgraduate Certificate Electrostimulation for Muscle Strengthening in Rehabilitation Medicine

- » Modality: online
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