Postgraduate Diploma
Neurophysiological Techniques and Protocols in the Assessment of Neuromuscular, Autonomic and Pain Conditions

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![tech global university logo]

Postgraduate Diploma
Neurophysiological Techniques and Protocols in the Assessment of Neuromuscular, Autonomic and Pain Conditions

» Modality: **online**
» Duration: **6 months**
» Certificate: **TECH Global University**
» Credits: **18 ECTS**
» Schedule: **at your own pace**
» Exams: **online**

Website: www.techtitute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-neurophysiological-techniques-protocols-assessment-neuromuscular-autonomic-pain-conditions

Index

01
Introduction

Neuromuscular studies constitute the largest volume of tests requested of the entire neurophysiological spectrum, which demonstrates the wide variety of pathological processes that can be evaluated with them. Given the importance, for every physician, of having a deep knowledge of this process, TECH has developed a complete program in which the student will learn the main neurophysiological techniques and protocols for the treatment of neuromuscular diseases, as well as how to address the severe pain they cause with the most advanced and complex therapies. In this way, the professional is positioning himself firmly in a healthcare job market in which he will stand out thanks to a full understanding of the most common neurophysiological conditions of concern to patients.

Get fully trained in one of the most in-demand fields of medical work and be the physician every hospital would want to have"

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All human body organs are innervated by the autonomic nervous system, so there are diseases of this system that have a significant negative impact on the independence of the patient who suffers from them. Such dysfunctions can present unique clinical difficulties and repercussions, and therefore require appropriately educated practitioners to address them.

This medical challenge, ranging from parkinsonian syndromes to multisystem atrophies or cerebellar ataxias, is a major obstacle for all professionals who have not acquired the relevant specialization, being a highly valued part of any healthcare team given the severity and common frequency of these pathologies.

Therefore, TECH presents this Postgraduate Diploma in Neurophysiological Techniques and Protocols in the Assessment of Neuromuscular, Autonomic and Pain Conditions as a way of professional growth for any physician seeking a higher specialization. Thanks to the knowledge acquired during this degree, the graduate will effectively address all kinds of pathologies related to the autonomic nervous system, knowing the diagnoses and protocols applicable to each particular case.

A unique educational program in which, in addition, the student enjoys total freedom to take on the course load at his or her own pace. Without classes or classroom requirements, the student can download the entire syllabus from any device with an internet connection and study it at his or her own pace and interests.

This **Postgraduate Diploma in Neurophysiological Techniques and Protocols in the Assessment of Neuromuscular, Autonomic and Pain Conditions** 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 physicians with expertise in neurophysiology

♦ The graphic, schematic, and eminently practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice

♦ Practical exercises where the self-assessment process can be carried out to improve learning

♦ Its special emphasis on innovative methodologies

♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments

♦ Access to content from any fixed or portable device with an Internet connection

"

Leave behind archaic, face-to-face teaching to join a program that understands your professional and personal needs"

This is your great opportunity to grow professionally in a very specific medical field, supported by the best experts in neurophysiology"

Enroll today in this Postgraduate Diploma in TECH and start now to improve your knowledge and possibilities of medical promotion.

Do you want to know the latest secrets of Neurophysiology? Join this program and become the medical professional you dream of.

The program's teaching staff includes professionals from the sector who contribute their work 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 training programmed to train 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 during the academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

02
Objectives

TECH's objective with this program is that its students obtain the professional and salary improvement they are looking for, providing them with highly specialized knowledge that is in demand in the healthcare labor market. To do so, it relies on a didactic methodology that not only provides them with the latest neurophysiological skills, but also focuses on fundamental transversal competencies such as organization, communication and personal initiative.

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You will surpass your own objectives thanks to the professional impulse that this Postgraduate Diploma will give you"

General Objectives

* Obtain a global and updated vision of Neurophysiologic diagnosis in its different training areas, allowing the student to acquire useful and updated knowledge, homogenize criteria following national and international standards
* Generate in students the desire to broaden their knowledge and apply what they have learned to daily practice, to the development of new diagnostic indications and to research

"You will improve your own working position sooner than you expect thanks to the transversality of this TECH Postgraduate Diploma"

Specific Objectives

Module 1. Neurophysiological Techniques in the Diagnosis of Neuromuscular Diseases

* Review the practical aspects and challenges of neurophysiological examinations: How to optimize equipment for different types of examinations?
* Deepen the understanding of the different types of nerve conduction studies
* Understand the rationale and technique for the performance of rare sensory and motor nerve conduction studies
* Physiological and non-physiological factors affecting the technical aspects of nerve conduction recording
* Technical aspects and clinical applications of specialized nerve conduction procedures, such as delayed responses and blink reflex
* Normal and abnormal motor unit morphology and pattern of recruitment.
* Clinical utility of advanced EMG techniques
* In-depth understanding of the physiology and technical aspects underlying repetitive nerve stimulation (RNS) and *jitter* study, with single fiber and concentric needle, with hands-on demonstrations
* Recognize how neuromuscular ultrasonography complements conventional neurophysiological evaluation
* Practice in the use of ultrasound for precise localization during botulinum toxin infiltration
* Evidence of instrumental guidance in muscle localization (EMG/Stimulation vs. Ultrasound)

Module 2. Electroneuromyography (ENMG) Protocols In the Diagnosis of Neuromuscular Diseases

- Develop a logical approach to conventional Clinical Neurophysiology techniques in the evaluation of focal or generalized neuromuscular disorders, neuromuscular junction disorders, including single fiber EMG
- Master the clinical and electrodiagnostic findings of focal neuropathies, plexopathies, cervical and lumbosacral radiculopathies
- Electrodiagnostic approach to a broad spectrum of neuromuscular disorders, including myopathies, ALS, motor neuronopathies, and polyneuropathies of different nature
- Perform a correct orientation to the neurophysiological findings in the diagnosis of motor plaque diseases and their clinical correlates
- Specialized electrodiagnostic modalities
- Deepen understanding of the peculiarities of electroneuromyographic studies in pediatric patients and intensive care units

Module 3. Autonomic Nervous System. Pain. Other complex techniques

- Deepen understanding of the concepts of anatomy and physiology of the autonomic nervous system and its interconnections with the pathological processes of the central and peripheral nervous system
- Understand the implications of autonomic nervous system dysfunction with respect to the rest of the organism's systems
- Manage the main test batteries to determine the different dysautonomic affections
- Train students to make an adequate diagnosis in the different processes affecting the autonomic nervous system
- Update models of dysautonomia in relation to complex regional pain syndrome or maintained sympathetic dystrophy
- Determine the relationship between autonomic nervous system and peripheral and central nervous system with central sensitization in chronic pain models
- Acquire the ability for the assessment and functional evaluation of painful processes
- Learn about different less widespread, little known and novel techniques, emphasizing their use in conjunction with other health professions in the context of interdisciplinary work

03
Course Management

The teaching staff of this program wants to see their students grow, as they have been meticulously chosen by TECH not only for their professional merits, but also for their human qualities. The student will feel welcome at all times to consult medical and neurophysiological doubts of all kinds, with a personalized orientation focused on their future projection towards a much higher health position.

"
Join TECH's educational family and be part of a great team willing to give everything to help you achieve the professional improvement you are looking for"

Management

Dr. Martínez Pérez, Francisco

- Clinical Neurophysiology Service. Puerto de Hierro University Hospital, Majadahonda
- Advanced Neurophysiologic studies at Clínica MIP Health-Integrated Personalized Integrated Medicine
- Neurophysiology Techniques applied at the Vitruvian Institute of Biomechanics and Surgery
- Medical Specialist in Clinical Neurophysiology
- Degree in Medicine and Surgery from the Complutense University of Madrid
- Master's Degree in Sleep: Physiology and Pathology, Pablo Olavide University
- Master's Degree in Neurological Electrodiagnosis from the University of Barcelona
- Researcher, University lecturer, professor of the Master's Degree in Sleep Medicine
- Author of several guidelines and consensuses for different medical societies (SENFC, SES, AEP) and the National Commission of the Specialty
- XXI Century National Prize in Medicine
- European Award in Medicine

Professors

Dr. Martínez Aparicio, Carmen

- Coordinator of the Clinical Neurophysiology Unit at Hospital Vithas, Almería and FEA of Clinical Neurophysiology at University Hospital Torrecárdenas, Almería.
- Current president of the Andalusian Society of Clinical Neurophysiology (SANFC)
- Degree in Medicine and Surgery from the University of Granada
- Master's Degree in Sleep by the Pablo Olavide University
- Expert in Musculoskeletal Ultrasound by Francisco de Vitoria University

Dr. Del Sanz de la Torre, Javier

- Assistant Physician of the Pain Unit at the University Hospital La Zarzuela
- Official Interuniversity Master in the Study and Treatment of Pain. Universities of Cantabria, Cádiz and Rey Juan Carlos de Madrid
- Master's Degree in Pain Treatment. University of Seville. Faculty of Medicine and Hospital Virgen del Rocío
- Master in Research and Specialized Treatment of Pain. University of Valencia
- Master's Degree in Ultrasound Anatomy Applied to Interventionism in Regional Anesthesia and Pain. University-Business Foundation. University of Valencia
- Postgraduate in Musculoskeletal Ultrasound and interventional ultrasound guided by the Spanish Society of Sports Medicine
- Expert in Ultrasound by the Spanish Pain Society
- Expert in Radiofrequency Therapy by the Spanish Pain Society

Dr. López Gutiérrez, Inmaculada

- Head of the Clinical Neurophysiology Department of the Rey Juan Carlos, Infanta Elena University and Villalba General Hospitals
- Degree in Medicine from the University of Granada
- Official Master's Degree in Neurosciences from the University of Seville
- Expert in Sleep Medicine by the Spanish Committee of Accreditation in Sleep Medicine (CEAMS)

"

The leading professionals in the field have come together to offer you the most comprehensive knowledge in this field, so that you can develop with total guarantees of success"

04

Structure and Content

As the contents of this Postgraduate Diploma are so specific and concrete, TECH has created the best current educational methodology, with which students acquire the most complex knowledge in the most profitable way possible. Supported by excellent audiovisual material, both complete and detailed, the student has a reduced teaching load and at the same time a much more realistic perspective of the most advanced neurophysiological techniques and protocols.

Get your Postgraduate Diploma in Neurophysiological Techniques and Protocols in the Evaluation of Neuromuscular, Autonomic and Pain Conditions directly and quickly, without doing a final paper"

Module 1. Neurophysiological Techniques in the Diagnosis of Neuromuscular Diseases.

1.1.   Anatomy and Physiology of the Peripheral Nervous System
1.2.   Sensory and Motor Nerve Conduction Studies
1.3.   Reflexology and Late Responses
    1.3.1.   F Wave
    1.3.2.   A Wave
    1.3.3.   H Wave
    1.3.4.   T Reflex
1.4.   Technical and Quality Considerations in Neuromuscular Electrodiagnostics. Procedural Errors. Precautions
1.5.   Neurophysiological Assessment of Neuromuscular Junction Function
    1.5.1.   Repetitive Nerve Stimulation
    1.5.2.   Jitter Study with Single Fiber Needle and Concentric Needle
        1.5.2.1. Voluntary Contraction
        1.5.2.2. Axonal Stimulation
1.6.   Principles of Electromyography. Electromyographic Response of the Normal Motor Unit. Insertion Activity. Motor Plate Activity. Motor Unit Potential. Pathological Muscle Activity
1.7.   Techniques for Quantitative Estimation of Motor Units
1.8.   Neurophysiological Study of the Facial and Trigeminal Nerves
    1.8.1.   MUNE
    1.8.2.   MUNIX
    1.8.3.   MUSIX
1.9.   Neurophysiological Evaluation of the Respiratory System
    1.9.1.   Laryngeal Nerves and Muscles
    1.9.2.   Phrenic Nerve and Diaphragm Muscle

1.10.   Neuromuscular Ultrasound
    1.10.1.   Basic Neural Semiology and Physical Basis Adapted to Ultrasound Study
    1.10.2.   Normal Anatomy and Ultrasound Correlation
        1.10.2.1. Upper Limbs
        1.10.2.2. Lower Extremities
    1.10.3.   Ultrasound Scanning of Peripheral Nerves
        1.10.3.1. Upper Limbs
        1.10.3.2. Lower Extremities
    1.10.4.   Ultrasound Diagnosis of
        1.10.4.1. Upper Limbs
        1.10.4.2. Lower Extremities
    1.10.5.   Advanced Image
    1.10.6.   Percutaneous Interventional Techniques

Module 2. Electroneuromyographic (ENMG) Protocols in the Diagnosis of Neuromuscular Diseases

2.1.   Neurophysiological Study in Pathology of the Cervical Roots and Brachial Plexus
2.2.   Neurophysiological Study in Pathology of Roots and Lumbosacral Plexus
2.3.   Neurophysiological Examination of Upper Limb Nerve Pathology. Mononeuropathies and Focal Lesions
    2.3.1.   Median Nerve
    2.3.2.   Ulnar Nerve
    2.3.3.   Radial Nerve
    2.3.4.   Nerves of the Shoulder Girdle
    2.3.5.   Others
2.4.   Neurophysiological Examination of Lower Limb Nerve Pathology Mononeuropathies and Focal Lesions
    2.4.1.   Sciatic (ischial) Nerve
    2.4.2.   Femoral Nerve
    2.4.3.   Obturator Nerve
    2.4.4.   Others

2.5.   Neurophysiological Examination of Polyneuropathies

2.6.   Neurophysiological Examination of Myopathies. Muscular Dystrophies, Myotonias and Channelopathies

2.7.   Neurophysiological Evaluation of Motor Neuron Diseases

2.8.   Clinical-neurophysiological Correlation of Neuromuscular Transmission Disorders

    2.8.1.   Myasthenia

    2.8.2.   Lamber-Eaton Syndrome

    2.8.3.   Botulism

    2.8.4.   Others

2.9.   Neurophysiological Study of Tremor and Other Movement Disorders

2.10.   Neurophysiological Examination of Neuromuscular Pathology in Pediatric Age

Module 3.   AutonomicNervous System. Pain. Other Complex Techniques or in Association with Other Specialties
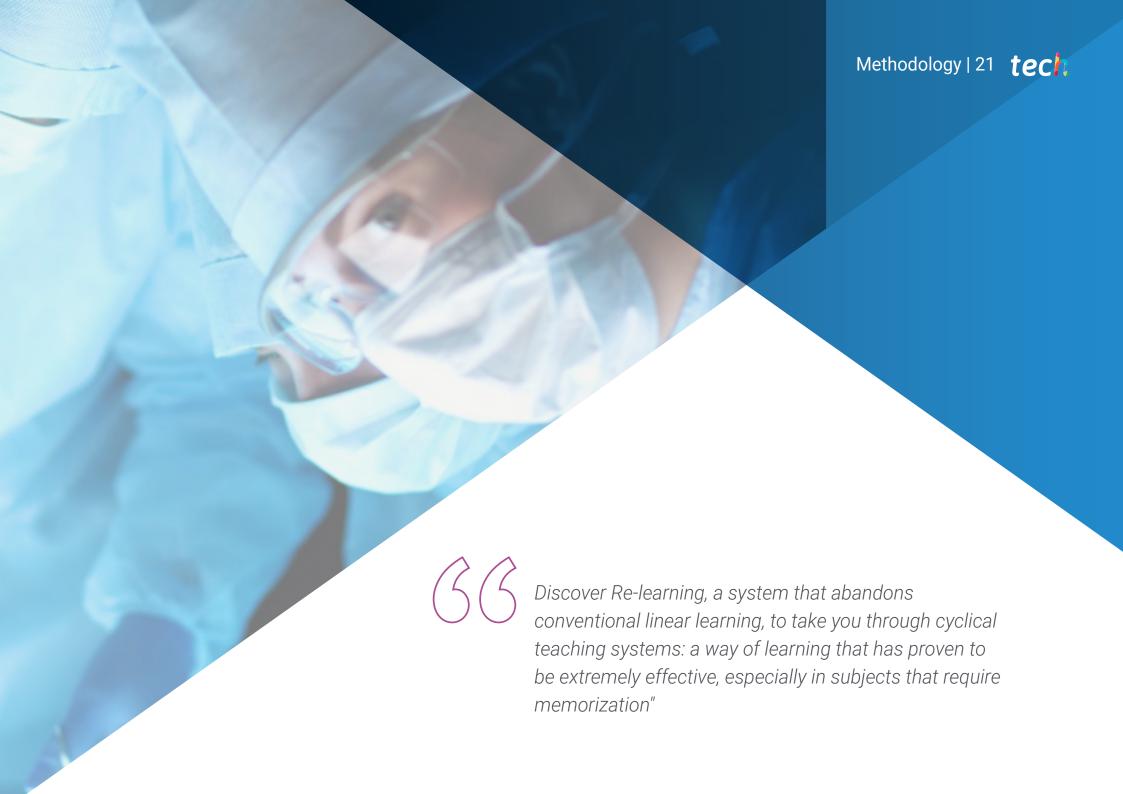
3.1.   Autonomic Nervous System

    3.1.1.   Anatomy

    3.1.2.   Physiology

    3.1.3.   Neurotransmission

3.2.   Autonomic Dysfunction

    3.2.1.   Semiology

    3.2.2.   Pathology

        3.2.2.1. Cardiovascular Disorders

        3.2.2.2. Thermoregulation Disorders

        3.2.2.3. Others.

            3.2.2.3.1. Autonomic Dysfunction in Neurodegenerative Diseases

            3.2.2.3.2. Urological Dysfunction

3.3.   Neurophysiological Tests for the Study and Assessment of Autonomic Disorders

3.4.   Pain

    3.4.1.   Pathophysiology of Pain

    3.4.2.   Complex Regional Pain. Neuropathic Pain

    3.4.3.   Central Sensitization

3.5.   Neurophysiological Techniques for the Evaluation of Painful Processes. Implications of Neurophysiology for its Diagnosis

    3.5.1.   Thermotest

    3.5.2.   CHEPs

    3.5.3.   Laser Evoked Potentials

3.6.   Utility Monitoring Techniques under Special Conditions

    3.6.1.   Bispectral Index (BIS)

    3.6.2.   ANI / NIPE

    3.6.3.   Others

3.7.   Application of Neurophysiological Techniques in Dentistry

    3.7.1.   Pathology

    3.7.2.   Utility Techniques and their Practical Application

3.8.   Neurophysiological Studies of the Pelvic Floor

    3.8.1.   Combined Techniques useful in the Assessment of Pelvic Floor Neuromuscular Function

3.9.   Clinical Neurophysiology and Biomechanics (I): Biomechanics of Gait

    3.9.1.   Instrumental Analysis of Kinetic, Kinematic and Electromyographic Patterns

    3.9.2.   Sequence of Muscle Activation in the Different Phases of Gait. Muscle Activation Maps

3.10.   Clinical Neurophysiology and Biomechanics (II)

    3.10.1.   Neurophysiologic Evaluation of the Foot and Ankle

    3.10.2.   Combined Neurophysiological and Ultrasound Studies

This will be the degree that will give more quality to your resume, with enough endorsement to reach much better healthcare positions"

05
Methodology

This training program provides you with a different way of learning. Our methodology uses a cyclical learning approach: *Re-learning*.
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the *New England Journal of Medicine have considered it to be one of the most effective.*

Discover Re-learning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an adundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.

According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in the physician's professional practice.

Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method.

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 evaluate 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.

Re-learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

Professionals will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

At the forefront of world teaching, the Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking online university (Columbia University).

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a high socioeconomic profile and an average age of 43.5 years old.

Re-learning 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.

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.

This program offers the best educational material, prepared with professionals in mind:

Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.

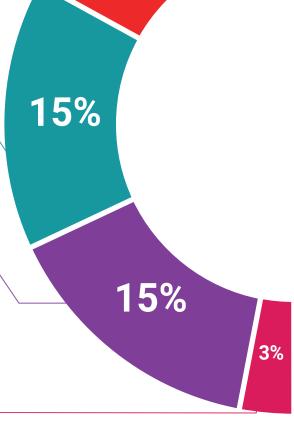### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.

Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive multimedia content presentation training Exclusive system was awarded by Microsoft as a "European Success Story".

Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.

20%

15%

15%

3%

20%

17%

7%

3%

Expert-led case studies and case analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.

Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises: so that they can see how they are achieving your goals.
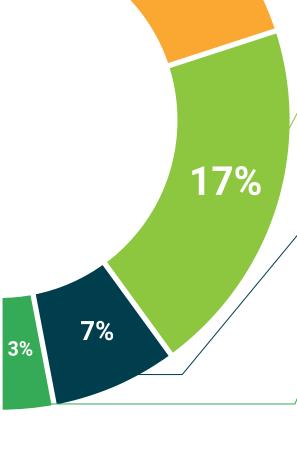
Classes

There is scientific evidence on the usefulness of learning by observing experts: The system termed Learning from an Expert strengthens knowledge and recall capacity, and generates confidence in the face of difficult decisions in the future.

Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.

06
Certificate

The Postgraduate Diploma in Neurophysiological Techniques and Protocols in the Assessment of Neuromuscular, Autonomic and Pain Conditions guarantees, in addition to the most rigorous and up to date training, access to a Postgraduate Diploma issued by TECH Global University.

"Successfully complete this training and receive your certificate without travel or laborious paperwork"

This program will allow you to obtain your **Postgraduate Diploma in Neurophysiological Techniques and Protocols in the Assessment of Neuromuscular, Autonomic and Pain Conditions** 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** title 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 Diploma in Neurophysiological Techniques and Protocols in the Assessment of Neuromuscular, Autonomic and Pain Conditions**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**

tech global university

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

Postgraduate Diploma in Neurophysiological Techniques and Protocols in the Assessment of Neuromuscular, Autonomic and Pain Conditions

This is a program of 450 hours of duration equivalent to 18 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

Dr. Pedro Navarro Illana
Rector

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.

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