





# Hybrid Professional Master's Degree

Musculoskeletal Ultrasound in Rehabilitation Medicine

Course Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.

We bsite: www.techtitute.com/in/medicine/hybrid-professional-master-degree-hybrid-professional-master-degree-musculoskeletal-ultrasound-rehabilitation-medicine

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# tech 06 | Introduction

Currently, there is greater acceptance by professionals of the use of musculoskeletal ultrasound because of its multiple benefits. Thus, its effectiveness has been proven in the diagnosis and treatment of injuries affecting muscles, tendons, ligaments or nerves.

All this has tipped the balance in favor of this technique over other methods and tools. A firm commitment to specialists, who must be constantly updating their skills and abilities for their jobs. That is why this Hybrid Professional Master's Degree in Musculoskeletal Ultrasound in Rehabilitation Medicine was created, which offers the most advanced and current knowledge to the health professional in only 12 months.

Thus, through innovative multimedia content provided by a specialized teaching team with extensive experience in the health area, the professional will delve into the sonoanatomy and the different pathologies affecting the shoulder, elbow, wrist, hand, hip, knee, leg, ankle, foot and forefoot. The professional, in addition, will delve into each of them, aided by case studies that will bring them closer to real situations that they may encounter in their daily clinical practice.

Once the 100% online theoretical phase is completed, the graduate will enter a 3-week intensive practical stay in a prestigious hospital center. This will allow you to update your knowledge in a real healthcare environment, together with experts in this field, who will accompany you to successfully achieve your objectives. An ideal scenario to be able to integrate the concepts addressed in the syllabus, in an environment of the highest level.

The medical professional is, therefore, facing a unique opportunity to expand his extensive knowledge in a unique program in the academic panorama, capable of integrating an online and flexible syllabus, with an advanced practical stage in a state-of-the-art health framework.

This **Hybrid Professional Master's Degree in Musculoskeletal Ultrasound in Rehabilitation Medicine** contains the most complete and up-to-date scientific program on the market. Its most outstanding features are:

- Development of more than 100 clinical cases presented by medical professionals, experts in Musculoskeletal Ultrasound in Rehabilitation Medicine
- 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
- Patient assessment and monitoring, the latest international recommendations for maneuvers in musculoskeletal ultrasound
- Comprehensive systematized action plans for major pathologies
- Presentation of practical workshops on diagnostic techniques
- · Algorithm-based interactive learning system for decision making in clinical situations
- Practical clinical guides on approaching different pathologies
- With a special emphasis on evidence-based medicine. All this will be complemented with theoretical lessons, questions to the expert, discussion forums on controversial issues and individual reflection work
- Availability of content from any fixed or portable device with an Internet connection
- In addition, you will be able to carry out a clinical internship in one of the best hospitals in the world



This Hybrid Professional Master's Degree provides you with multimedia pills and clinical case studies that you can access 24 hours a day, from any electronic device with an internet connection"

In this Professional Master's Degree proposal, of professionalizing character and blended learning modality, the program is aimed at updating medical professionals who develop their functions in areas of Rehabilitation Medicine, and who require a high level of qualification. The contents are based on the latest scientific evidence, and oriented in a didactic way to integrate theoretical knowledge into medical practice, and the theoretical-practical elements will facilitate the updating of knowledge and will allow decision making in patient management.

Thanks to its multimedia content developed with the latest educational technology, they will allow the medical professional a contextual and situated learning, that is to say, a simulated environment that will provide an immersive learning 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 throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.

Through this program you will be able to update your knowledge and be able to provide quality patient care based on the latest scientific evidence.

You have a library of multimedia resources that you can access comfortably from any electronic device with an Internet connection.







# tech 10 | Why Study this Hybrid Professional Master's Degree?

#### 1. Upgrade from the latest technology available

Undoubtedly, technological advances have revolutionized Musculoskeletal Ultrasound in Rehabilitation Medicine, allowing much more effective scans with highly beneficial results for patients. For this reason, and with the aim of bringing the specialist closer to this technology, TECH presents this Hybrid Professional Master's Degree, which consists of a practical stage, in which the professional will enter a cutting-edge clinical environment, accessing state-of-the-art technology in this area.

#### 2. Gaining In-Depth Knowledge from the Experience of Top Specialists

TECH offers in this program a specialized teaching team with extensive experience, which provides its extensive knowledge in the management of Musculoskeletal Ultrasound. Likewise, the professional will have at his disposal professional experts, who are part of the clinical center, where he will carry out the 3-week stay. Thus, throughout this pedagogical journey, the graduate will be surrounded by the best in the field.

#### 3. Entering First-Class Clinical Environments

TECH maintains a philosophy based on providing the highest quality in all its programs. That is why it carefully selects all the available centers for Internship Programs. In this way, the specialist will have guaranteed access to a prestigious clinical environment in the area of Musculoskeletal Ultrasound in Rehabilitation Medicine. All this will allow you to experience first-hand the day-to-day work in a demanding area that is constantly adapting to technical innovations.





# Why Study this Hybrid Professional Master's Degree? | 11 tech

#### 4. Combining the Best Theory with State-of-the-Art Practice

This academic institution has wanted to make a leap in the current pedagogical programs, and with this Hybrid Professional Master's Degree it responds to the daily work of specialists, reducing the long hours of teaching load, so frequent in other methodologies. TECH offers a new academic model, which the most advanced theory and practice in Musculoskeletal Ultrasound in Rehabilitation Medicine.

#### 5. Expanding the Boundaries of Knowledge

The specialist who enters this program will have at the end a much more complete and current vision of Musculoskeletal Ultrasound in Rehabilitation Medicine. This will allow him not only to integrate the techniques and methods into his daily practice, but also to take them to any high-level hospital center where he wants to practice his profession with the utmost rigor.







# tech 14 | Objectives



# **General Objective**

• The general objective of the Hybrid Professional Master's Degree in Musculoskeletal Ultrasound in Rehabilitation Medicine is to ensure that the professional updates the diagnostic and therapeutic procedures of the specialty in a theoretical and practical way, through a hospital stay designed with clinical and academic rigor, under the guidance of renowned professionals in a hospital center of the highest scientific quality and technological innovation. In this program the professional will address the main interventions of the specialist, which will allow him to improve and enhance his skills in the medical care of his patients



You will achieve, in only 12 months, the renewal of the ultrasound technique based on the latest scientific evidence"





#### Module 1. Basic Ultrasound

- Learn what ultrasound and an ultrasound scanner consists of, its history and its application in physiotherapy
- Identify the ultrasound patterns of the different structure of the locomotor system
- Study the different artifacts that exist in ultrasound and learn how to use them in a beneficial way
- Explain the use of ultrasound by the rehabilitation physician and its legal considerations
- Describe the piezoelectric effect and the physical basis of ultrasound
- Explain the different components of the equipment
- Explain the production of the ultrasound image
- Describe the terminology used in ultrasound
- Define the types of images obtained by ultrasound and the different tissue patterns

### Module 2. Upper Limb Ultrasound: Shoulder

- Identify the main structures of the shoulder that are visible in ultrasound
- Describe the normal examination of the structures of the anterior aspect of the shoulder
- Describe the normal examination of the structures of the lateral aspect of the shoulder
- Describe the normal examination of the structures of the posterior aspect of the shoulder
- Recognize the most common lesions of the shoulder, to ensure correct ultrasound-guided treatment and/or monitoring of their evolution
- Describe the least common pathologies that can affect the shoulder joint
- · Learn how to perform ultrasound-guided dynamic assessment tests for the shoulder

#### Module 3. Upper Limb Ultrasound: Elbow

- Describe the sonoanatomy of the elbow joint
- Describe the normal examination of the structures of the anterior aspect of the elbow
- Describe the normal examination of the structures of the lateral aspect of the elbow
- Describe the normal examination of the structures of the posterior aspect of the elbow
- Describe the normal examination of the structures of the medial aspect of the elbow
- Identify the most common lesions of the elbow, to ensure correct ultrasound-guided treatment and/or monitoring of their evolution
- Learn how to perform ultrasound-guided dynamic assessment tests for the elbow
- Describe the least common pathologies that can affect the elbow joint

### Module 4. Upper Limb Ultrasound: Wrist

- Describe the sonoanatomy of the wrist joint
- Describe the normal examination of the structures of the dorsal aspect of the wrist
- Describe the normal examination of the structures of the palmar aspect of the wrist
- Identify the most common lesions of wrist, to ensure correct ultrasound-guided treatment and/or monitoring of their evolution
- Learn how to perform ultrasound-guided dynamic assessment tests for the wrist
- Describe less common pathologies that can affect the wrist joint

# tech 16 | Objectives

#### Module 5. Upper Limb Ultrasound: Hand

- Describe the sonoanatomy of the hand joint
- Describe the normal examination of the structures of the dorsal aspect of hand
- Describe the normal examination of the structures of the palmar aspect of hand
- Identify the most common lesions of the hand, to ensure correct ultrasound-guided treatment and/or monitoring of their evolution
- · Learn how to perform ultrasound-guided dynamic assessment tests for the hand
- Describe the least common pathologies that can affect the hand

#### Module 6. Lower Limb Ultrasound: Hip

- Learn the echo anatomy of the different structures of the hip
- Describe the normal examination of the structures of the anterior aspect of the hip
- Describe the normal examination of the structures of the lateral aspect of the hip
- Describe the normal examination of the structures of the posterior aspect of the hip
- Describe the normal examination of the structures of the medial aspect of the hip
- Identify the most common lesions of the hip, to ensure correct ultrasound-guided treatment and/or monitoring of their evolution
- Learn how to perform ultrasound-guided dynamic assessment tests for the hip
- Describe the least common pathologies that can affect the hip

#### Module 7. Lower Limb Ultrasound: Thigh

- Learn the echo anatomy of the different structures of the thigh
- Describe the normal examination of the structures of the anterior aspect of the thigh
- Describe the normal examination of the structures of the lateral aspect of the thigh
- Describe the normal examination of the structures of the posterior aspect of the thigh
- Describe the normal examination of the structures of the medial aspect of the thigh
- Identify the most common lesions of the thigh, to ensure correct ultrasound-guided treatment and/or monitoring of their evolution
- Learn how to perform ultrasound-guided dynamic assessment tests for the thigh
- Describe the least common pathologies that can affect the thigh
- Identify the muscles of the thigh and the most common muscular lesions

#### Module 8. Lower Limb Ultrasound: Knee

- Recognize the tendon and ligament structures of the knee and their most common injuries
- Describe the normal examination of the structures of the anterior aspect of the knee
- Describe the normal examination of the structures of the lateral aspect of the knee
- Describe the normal examination of the structures of the posterior aspect of the knee
- Describe the normal examination of the structures of the medial aspect of the knee
- Identify the most common lesions of the knee, to ensure correct ultrasound-guided treatment and/or monitoring of their evolution
- Learn how to perform ultrasound-guided dynamic assessment tests for the knee
- Describe the least common pathologies that can affect the knee

#### Module 9. Lower Limb Ultrasound: Leg

- Learn the echo anatomy of the different structures of the leg in all its compartments
- Identify the muscles of the leg and the most common muscular lesions in this part of the body
- Describe the normal examination of the structures of the anterior aspect of the leg
- Describe the normal examination of the structures of the lateral aspect of the leg
- Describe the normal examination of the structures of the posterior aspect of the leg
- Learn how to perform ultrasound-guided dynamic assessment tests for the leg
- Describe the least common pathologies that can affect the leg

#### Module 10. Lower Limb Ultrasound: Ankle

- Learn the sonoanatomy of the ankle
- Describe the normal examination of the structures of the anterior aspect of the ankle
- Describe the normal examination of the structures of the lateral aspect of the ankle
- Describe the normal examination of the structures of the posterior aspect of the ankle
- Describe the normal examination of the structures of the medial aspect of the ankle
- Learn how to perform ultrasound-guided dynamic assessment tests for the ankle
- Identify the most common lesions of the ankle, to ensure correct ultrasound-guided treatment and/or monitoring of their evolution
- Describe the least common pathologies that can affect the ankle

#### Module 11. Lower Limb Ultrasound: Foot

- Recognize the most common lesions of this zone, to ensure correct ultrasound-guided treatment and/or monitoring of their evolution
- Describe the normal examination of the structures of the dorsal aspect of the foot
- Describe the normal examination of the structures of the palmar aspect of the foot
- Describe the least common pathologies that can affect the foot
- Learn how to perform ultrasound-guided dynamic assessment tests for the foot

#### Module 12. Lower Limb Ultrasound: Forefoot

- Describe the normal examination of the structures of the dorsal aspect of the forefoot
- Describe the normal examination of the structures of the palmar aspect of the forefoot
- Identify the most common lesions of the forefoot, to ensure correct ultrasound-guided treatment and/or monitoring of their evolution
- Describe the least common pathologies that can affect the forefoot
- Learn how to perform ultrasound-guided dynamic assessment tests for the forefoot





# tech 20 | Skills



### **General Skills**

- Possess and understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context
- Know how to apply acquired knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study
- Integrate knowledge and face the complexity of making judgments based on information that, while incomplete or limited, includes reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments and judgments
- Know how to communicate their conclusions and the ultimate knowledge and rationale behind them to specialized and non-specialized audiences in a clear and unambiguous manner
- Acquire the learning skills that will enable them to continue studying in a manner that will be largely self-directed or autonomous
- Develop within the profession in terms of working with other health professionals, acquiring skills to work as a team
- Recognize the need to maintain your professional skills and keep them up to date, with special emphasis on autonomous and continuous learning of new information
- Develop the capacity for critical analysis and research in your professional field



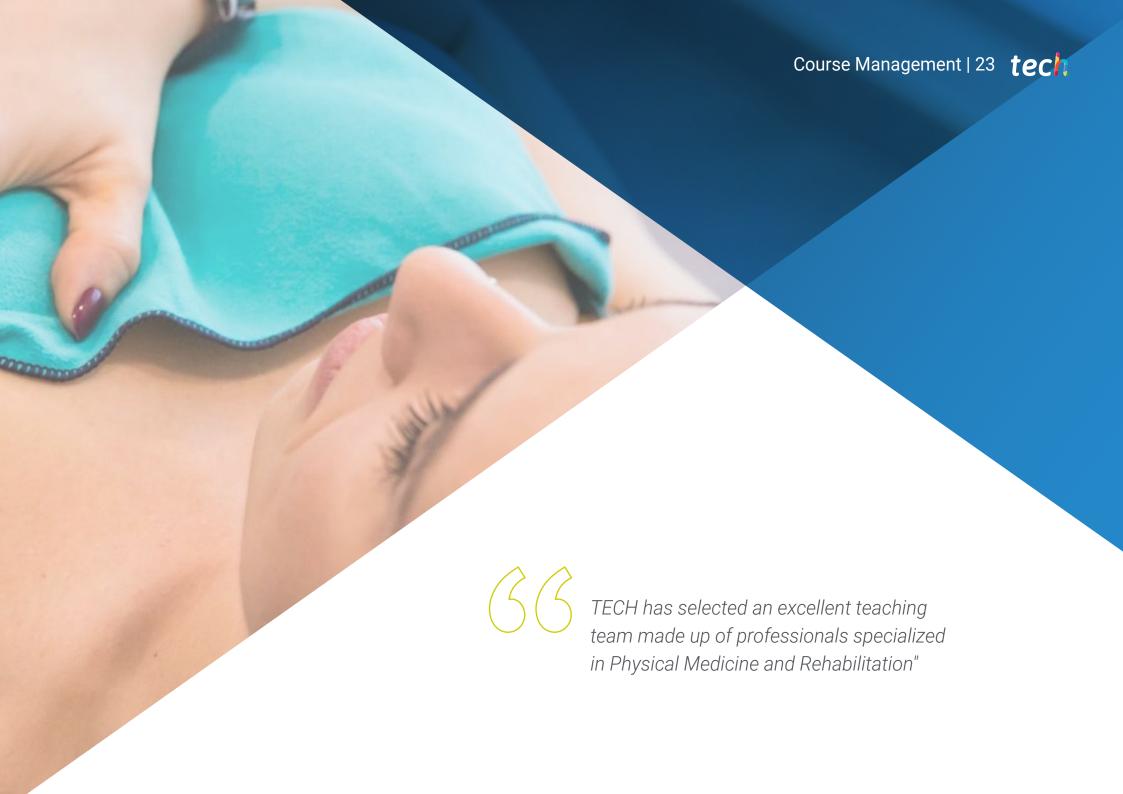




# **Specific Skills**

- Learn to locate the different anatomical structures of the region
- Identify pathologies for a correct treatment of ultrasound-guided rehabilitation medicine
- Define the limits of ultrasound
- Learning the use of ultrasound in the context of the competences of the Rehabilitation Physician
- Know the architectural and technical requirements for the implementation of an image-guided therapy service or section
- Use rigorously, safely and confidently the diagnostic aids characterized by complex technology
- Establish an effective therapeutic relationship with patients and families
- Manage scientific databases for carrying out reviews and bibliographic searches of scientific studies
- Formulate, implement and evaluate standards, action guidelines and protocols specific to the practice of medicine
- Conduct a critical and in-depth study on a topic of scientific interest in the field of Musculoskeletal Ultrasound in Rehabilitation Medicine
- Communicate the results of an investigation after having analyzed, evaluated and synthesized the data
- · Manage healthcare resources with efficiency and quality criteria
- Work as part of a team providing expert knowledge in the field of Critical Care
- Educate users on health issues so that they acquire healthy lifestyles, in order to avoid situations that may compromise their health





# tech 24 | Course Management

### Management



# Dr. Castillo Martín, Juan Ignacio

- Head of Physical Medicine and Rehabilitation Department at 12 de Octubre University
- Doctor Specialist in Physical and Rehabilitation Medicine, Hospital Complex Ruber Juan Bravo
- Rehabilitation Physician at the Traffic Accidents Unit of the Ruber Juan Bravo Hospital Complex
- Rehabilitation Physician at Hospital Recoletas Cuenca
- Coordinator of continuing education of the Spanish Society of Cardiology in Exercise Testing with Oxygen Consumption
- Associate Professor in UCM the Faculty of Medicine
- Teaching coordinator in continuing education courses at the Madrid Regional La Ministry of Health: "Tertiary prevention in chronic cardiopathic patients" Cardiac Rehabilitation
- Degree in Medicine and Surgery. University of Salamanca
- Master's Degree in Cardiac Rehabilitation. SEC-UNED
- Master in and Disability Assessment UAM
- Master's Degree in Children's Disability. UCM
- PhD in Neuroscience. University of Salamanca
- Member of the Spanish Society of Cardiology

#### **Professors**

#### Dr. Santiago Nuño, Fernando

- Physiotherapist, Osteopath, Podiatrist and Co-Director of La Clinica Nupofis
- Physical Therapist and Podiatrist at Armstrong International Clinic
- Orthopedist at Ortoaccesible
- Professor of Musculoskeletal Ultrasound and Ultrasound-guided Infiltrations at UCM and UEM
- PhD in Podiatry, UDC
- Physiotherapist specialized in Traumatology, Neurology and Rehabilitation of Sports Injuries at Armstrong International Clinic
- Master's Degree in Advanced Clinical Podiatry at CEU-UCH
- CEU-UCH Master's Degree in Clinical Management, Medical and Healthcare Management
- Master's Degree in Musculoskeletal Ultrasound by CEU-UCH
- Master's Degree in Manual Therapy Specialist by UCM
- Online Master's Degree in Podiatry Research by URJC
- Master's Degree of Specialist and Supervisor of Orthopedic Products by UCM

#### Dr. Uzquiano Guadalupe, Juan Carlos

- Specialist in Physical Medicine and Rehabilitation in the Guttmann Institute
- Associate Professor in the Master's Degree in Neurorehabilitation at Institut Guttmann
- Collaborator in the practical teaching of the Department of Radiology, Rehabilitation and Physiotherapy of the UCM
- Specialist in Physical Medicine and Rehabilitation at Hospital 12 de Octubre
- Master's Degree in Clinical Reasoning and Practice, UAH
- Professional Master's Degree in Musculoskeletal Ultrasound and Echoguided Interventional Ultrasound by CEU San Pablo University
- Expert in Emerging Viruses from UFV

#### Dr. Rivillas Gómez, Alberto

- Specialist in Physical Medicine and Rehabilitation
- Rehabilitation Physician at the European Musculoskeletal Institute
- Physician at the Knee Unit of the European Musculoskeletal Institute
- Resident Physician of Physical Medicine and Rehabilitation at the 12 de Octubre University Hospital

#### Dr. Juano Bielsa, Álvaro

- Specialist in Physical Medicine and Rehabilitation at 12 de Octubre University Hospital
- Specialist in Physical Medicine and Rehabilitation at the Virgen del Rocío University Hospital
- Specialist in Physical Medicine and Rehabilitation at the Traffic Accident Unit of the HLA University Hospital Moncloa
- Speaker at the Rehabilitation Scientific Conferences

### Dr. Carmona Bonet, María A.

- Specialist in Physical Medicine and Rehabilitation
- Teacher in university studies of Medicine
- Collaborating physician in practical teaching for medical studies
- Dr. from the Complutense University of Madrid with the thesis Shockwave treatment of long-standing skin ulcers

#### Dr. López Sáez, Mireya

- Physician specialized in Physical Medicine and Rehabilitation
- Specialist in Physical Medicine and Rehabilitation at 12 de Octubre University Hospital
- Collaborating physician in practical teaching for these university students in Medicine
- Member of the Illustrious Official College of Physicians of the Community of Madrid

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#### Dr. García Gómez, Nuria

- Specialist in Physical Medicine and Rehabilitation
- Specialised Faculty Physical Medicine and Rehabilitation at the Hospital 12 de Octubre
- Collaborator of the Department of Physical Medicine and Rehabilitation and Hydrology at 12 de Octubre Hospital
- Specialist in Family and Rehabilitation Medicine at Gregorio Marañón General University Hospital
- Physician in health care centers in the southeastern health area of Madrid
- Degree in Medicine and Surgery from the UAH
- Diploma in Neurorehabilitation by the Institute of Continuing Education of the UB

#### Dr. Sevilla Torrijos, Gustavo

- FEA at the Rehabilitation Department of the 12 de Octubre University Hospital
- FEA in the Rehabilitation Department of Torrejón University Hospital
- FEA of Rehabilitation of the Hospital de Guadarrama
- Specialist in Integral Assistance in Health Emergencies and Emergencies by the European University Miguel de Cervantes
- Program in Diagnostic Imaging in Musculoskeletal Pain
- Program in Updating in Localized Neuropathic Pain
- Program in Osteoarthritis and Pain Sensitization
- Member of the Spanish Society of Rehabilitation and Physical Medicine (SERMEF)

### Dr. García Expósito, Sebastián

- Expert in Radiodiagnostic Techniques and Applications
- · Radiodiagnostic Technician at Sanitas Women's Center
- Radiodiagnostic Technician at Hospital de la Zarzuela
- Degree in Bioimaging Production from UNLZ

#### Dr. Casado Hernández, Israel

- Podiatrist and Podiatric Researcher
- Director of Vitalpie
- Podiatrist in grassroots soccer clubs such as Getafe CF and AD Alcorcón
- Associate professor in university studies
- Author of more than 20 scientific articles and 7 book chapters
- Dr. in Epidemiology and Clinical Research in Health Sciences from the URJC
- Degree in Podiatric Medicine from the Complutense University of Madrid
- Master's Degree in Podiatry Research by the URJC

#### Ms. Sánchez Marcos, Julia

- Physiotherapist, Osteopath and Pilates teacher at the Nupofis Clinic
- Physiotherapist and Osteopath at the Isabel Amoedo Physiotherapy Clinic
- Physiotherapist at Hospital Vithas Nuestra Señora de Fátima
- Physiotherapist at ASPRODES-FEAPS
- Physiotherapist at Fisiosalud Clinic
- Master's Degree in Electrotherapy at CEU-UCH
- Expert in Ultrasound Sonoanatomy of the Locomotor System by the European University of Madrid
- Program in Neurodynamics by Zerapi Fisioterapia Avanzada
- Program in Percutaneous Therapeutic Electrolysis (EPTE)
- Cursado en Fibrólisis Neurodinámica Miofascial y Articular «Ganchos» por Instema
- Program in Diathermy by Helios in Electromedicine

### Dr. Santiago Nuño, José Ángel

- Physiotherapist, Osteopath, Dietitian, Nutritionist and Co-Director of La Clinica Nupofis
- Dietician and Nutritionist in different physiological situations in Medicadiet
- Diploma in Physiotherapy, CEU San Pablo University
- Diploma in Human Nutrition and Dietetics from CEU San Pablo University
- Postgraduate Specialist in Food Exchange System for Diet and Menu Planning by UPNA for the Preparation of Diets and Planning of Menus by the UPNA
- Physical Therapist Specializing in Traumatology, Neurology and Sports Injury Rehabilitation at Armstrong International Clinic
- Master's Degree in Sports Physiotherapy by the UCM
- Expert in Traditional Chinese Medicine and Acupuncture for Physiotherapists at the UCLM

#### Dr. Nieri, Martín Alejandro

- Diagnostic Imaging Technician Expert in Musculoskeletal Ultrasonography
- Diagnostic Imaging Technician at the University Hospital Son Espases
- CEO of Ultrasound & Teleradiology Support Services SLCEO
- Director of the Ultrasound Quality Control Department at the Ultrasound & Teleradiology Assistance Service SL
- Freelance Diagnostic Imaging Technician
- Lecturer in Ultrasound training programs
- Participation in various Ultrasound projects

## Dr. Moreno, Cristina Elvira

- Physiotherapist Expert in Musculoskeletal Ultrasound
- Physiotherapist at Nupofis clinic
- Physiotherapist at fisios Islas21 clinic
- Physiotherapist at fisios clinic
- Physiotherapist at the Fibromyalgia Association, AFIBROM
- Degree in Physiotherapy from the UCM
- Master's Degree in Physiotherapy Musculoskeletal Ultrasound, Universidad CEU San Pablo

#### Dr. Pérez Calonge, Juan José

- Podiatrist Expert in Integral Foot Surgery
- Podiatrist at the Gayarre Podiatric Clinic
- Co-author of the article Technique for direct examination of onychomycosis by potassium hydroxide microscopy
- Doctor in Health Sciences from the UPNA
- Master's Degree in Health Expertise by the UCM
- · Master's Degree in Advanced Podiatry by the CEU
- Expert in Surgery, UCM
- Course in Infiltration of the Foot by UCM

#### Dr. Teijeiro, Javier

- Director and Physiotherapist of the Clinic Atlas Fisioterapia
- Physiotherapist and Technical Director of the Physiotherapy Service of Centro Asistencial San Pablo y San Lázaro de Mondoñedo
- Autonomous Delegate of the Spanish Society of Ultrasound and Physical Therapy
- Physiotherapist of Clínica Dinán Viveiro
- Doctorate in Health, Disability, Dependency and Well-being
- Master's Degree in Natural Medicine and its applications in Primary Care by the USC
- Master's Degree in Pharmacology for Physiotherapists by the University of Valencia
- Master's Degree in Intervention in Disability and Dependency by the UDC
- Master's Degree in Diagnostic Imaging by the University of Valencia
- Expert in Musculoskeletal Ultrasound by UFV



**Educational Plan** Technological advances force professionals to constantly update their knowledge. That is why this Hybrid Professional Master's Degree consists of a theoretical program, which will lead you to obtain the latest information on the use of ultrasound in relation to the different joints of the body and the pathologies that may occur in them. All, in addition, with rich multimedia content (video summaries, detailed videos, diagrams, among others). This study plan is completed by a practical internship in a leading hospital in the health field.



# tech 30 | Educational Plan

#### Module 1. Basic Ultrasound

- 1.1. Basic Ultrasound L
- 1.2. General Aspects of Musculoskeletal
- 1.3. Physical Bases of Ultrasound. Piezoelectric Effect
- 1.4. Basic Ultrasound II
- 1.5. Knowledge of the Equipment
- 1.6. Equipment Management: Parameters
- 1.7. Technological Improvements
- 1.8. Basic Ultrasound III
- 1.9. Artifacts in Ultrasound
- 1.10. Foreign Bodies
- 1.11. Types of Images and Different Tissue Patterns in Ultrasound
- 1.12. Dynamic Maneuvers
- 1.13. Advantages and Disadvantages of Ultrasound

#### Module 2. Upper Limb Ultrasound: Shoulder

- 2.1. Normal Sonoanatomy of the Shoulder
- 2.2. Examination of the Anterior Aspect Structures
- 2.3. Examination of the Posterior Aspect Structures
- 2.4. Examination of the Lateral Aspect Structures
- 2.5. Shoulder Pathology
- 2.6. Most Common Tendon Pathology
- 2.7. Other Shoulder Joint Pathology
- 2.8. Dynamic Tests on the Shoulder
- 2.9. Clinical Cases
- 2.10. Clinical videos
- 2.11. In Focus Video

### Module 3. Upper Limb Ultrasound: Elbow

- 3.1. Normal Sonoanatomy of the Elbow
- 3.2. Examination of the Anterior Aspect Structures
- 3.3. Examination of the Lateral Aspect Structures
- 3.4. Examination of the Medial Aspect Structures
- 3.5. Examination of the Posterior Aspect Structures
- 3.6. Elbow Pathology
- 3.7. Most Common Tendon Pathology
- 3.8. Other Elbow Joint Pathology
- 3.9. Dynamic Tests on the Elbow
- 3.10. Clinical Cases
- 3.11. In Focus Video

### Module 4. Upper Limb Ultrasound: Wrist

- 4.1. Normal Sonoanatomy of the Wrist
- 4.2. Dorsal Aspect Examination
- 4.3. Palmar Aspect Examination
- 4.4. Wrist Pathology
- 4.5. Most Common Tendon Pathology
- 1.6. Other Wrist Joint Pathology
- 1.7. Dynamic Tests on the Wrist
- 4.8. Clinical Cases

### Module 5. Upper Limb Ultrasound: Hand

- 5.1. Introduction
- 5.2. Normal Sonoanatomy of the Hand
- 5.3. Dorsal Aspect Examination
- 5.4. Palmar Aspect Examination
- 5.5. Pathology of the Hand
- 5.6. Most Common Pathologies of the Hand
- 5.7. Dynamic Tests on the Hands
- 5.8. Clinical Cases



### Module 6. Lower Limb Ultrasound: Hip

- 6.1. Normal Sonoanatomy of the Hip
- 6.2. Examination of the Anterior Aspect Structures
- 6.3. Examination of the Lateral Aspect Structures
- 6.4. Examination of the Medial Aspect Structures
- 5.5. Examination of the Posterior Aspect Structures
- 6.6. Hip Pathology
- 6.7. Most Common Tendon Pathology
- 6.8. Most Common Muscle Pathology
- 6.9. Other Hip Joint Pathology
- 6.10. Dynamic Tests on the Hip
- 6.11. In Focus Video
- 6.12. Clinical Cases

# Module 7. Lower Limb Ultrasound: Thigh

- 7.1. Introduction
- 7.2. Normal Sonoanatomy of the Thigh
- 7.3. Examination of the Anterior Aspect Structures
- 7.4. Examination of the Lateral Aspect Structures
- 7.5. Examination of the Medial Aspect Structures
- 7.6. Examination of the Posterior Aspect Structures
- 7.7. Thigh Pathology
- 7.8. Most Common Tendon Pathology
- 7.9. Other Thigh Pathologies
- 7.10. Dynamic Tests on the Thigh
- 7.11. In Focus Video
- 7.12. Clinical Cases

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### Module 8. Lower Limb Ultrasound: Knee

- 8.1. Introduction
- 8.2. Normal Sonoanatomy of the Knee
- 8.3. Examination of the Anterior Aspect Structures
- 8.4. Examination of the Medial Aspect Structures
- 8.5. Examination of the Lateral Aspect Structures
- 8.6. Examination of the Posterior Aspect Structures
- 8.7. Sciatic Nerve Examination
- 8.8. Knee Ligament Pathology
- 8.9. Most Common Tendon Pathology
- 8.10. Other Knee Joint Pathology
- 8.11. Dynamic Tests on the Knee
- 8.12. Clinical Cases
- 8.13. In Focus Video

## Module 9. Lower Limb Ultrasound: Leg

- 9.1. Introduction
- 9.2. Normal Sonoanatomy of the Leg
- 9.3. Examination of the Anterior Aspect Structures
- 9.4. Examination of the Lateral Aspect Structures
- 9.5. Examination of the Posterior Aspect Structures
- 9.6. Leg Pathology
- 9.7. Most Common Pathologies of the Leg
- 9.8. Dynamic Tests on the Leg
- 9.9. Clinical Cases
- 9.10. In Focus Video





#### Module 10. Lower Limb Ultrasound: Ankle

- 10.1. Introduction
- 10.2. Normal Sonoanatomy of the Ankle
- 10.3. Examination of the Anterior Aspect Structures
- 10.4. Examination of the Lateral Aspect Structures
- 10.5. Examination of the Medial Aspect Structures
- 10.6. Examination of the Posterior Aspect Structures
- 10.7. Pathology of the Ankle
- 10.8. Most Common Tendon Pathology
- 10.9. Most Common Ligament Pathology
- 10.10. Other Ankle Joint Pathologies
- 10.11. Dynamic Tests on the Ankle

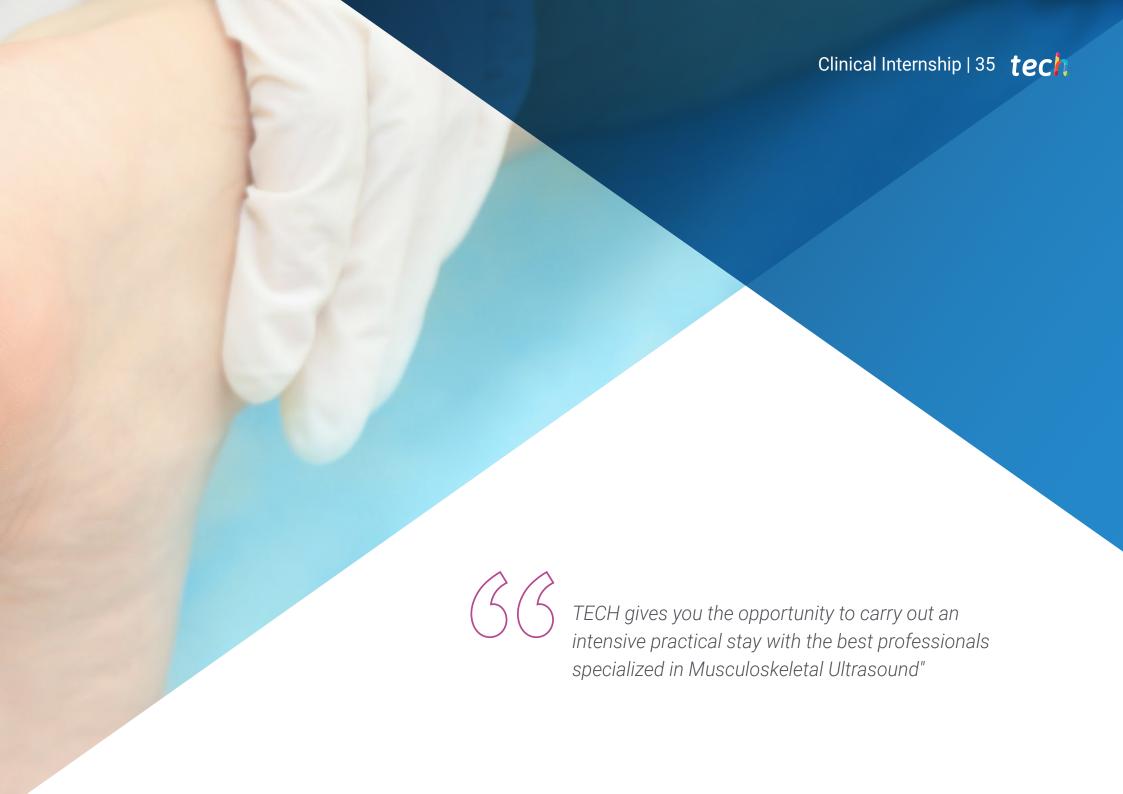
### Module 11. Lower Limb Ultrasound: Foot

- 11.1. Normal Sonoanatomy of the Foot
- 11.2. Examination of the Dorsal Aspect Structures, Lateral and Medial
- 11.3. Examination of the Plantar Aspect Structures
- 11.4. Pathology of the Foot
- 11.5. Most Common Pathology of the Foot
- 11.6. Dynamic Tests on the Foot

### Module 12. Lower Limb Ultrasound: Forefoot

- 12.1. Normal Sonoanatomy of the Forefoot
- 12.2. Examination of the Dorsal Aspect Structures
- 12.3. Examination of the Plantar Aspect Structures
- 12.4. Forefoot Pathology
- 12.5. Most Common Pathology of the Forefoot
- 12.6. Dynamic Tests on the Foot
- 12.7. Clinical Cases





# tech 36 | Clinical Internship

The Internship Program's Internship Program consists of a 3-week practical stay, from Monday to Friday, with 8 consecutive hours of practical training with an assistant specialist. This stay allows the medical professional to be with real patients next to a team of specialists of reference in the area of Musculoskeletal Ultrasound in Rehabilitation Medicine. An ideal scenario to be able to apply, first hand, the most recent techniques, with the most innovative equipment in this area.

In this training proposal, of a completely practical nature, the activities are aimed at developing and perfecting the competencies necessary for the provision of health care in areas and conditions that require a high level of qualification, and which are oriented towards specific training for the exercise of the activity, in an environment of patient safety and high professional performance.

TECH thus offers an excellent opportunity for professionals who wish to take a step further in their update in Musculoskeletal Ultrasound in Rehabilitation Medicine. All in a program that integrates, like no other in the pedagogical panorama, scientific concepts in a practical stage, in a health space, which is at the forefront.

The practical part will be carried out with the active participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of the professors and other fellow trainees to facilitate teamwork and multidisciplinary integration as transversal competencies for Doctor practice (learning to be and learning to relate).

The procedures described below will form the basis of the practical part of the training, and their completion is subject to both the suitability of the patients and the availability of the center and its workload, with the proposed activities being as follows:







Module	Practical Activity
Handling of ultrasound equipment	Set parameters for working with ultrasound scanners
	Differentiate the imaging patterns and tissues to be obtained in ultrasound
	Configure the machine based on the type of lesion to be detected
	Perfecting total control of the transducer probe
Musculoskeletal Ultrasound Diagnosis	Define the area to be analyzed to obtain an accurate image in the ultrasound examination
	Fully evaluate the region of interest in order to avoid unnecessary errors
	Increase diagnostic sensitivity by evaluating selected structures in both longitudinal and transverse planes
Arthrosis and microcrystalline arthropathies	Early detection of articular cartilage alterations and osteophytes
	Make a differential diagnosis in symptomatic peripheral joints
	Monitor the therapeutic response in cases of gout
	Detect possible joint inflammation
Rheumatoid Arthritis	Make a differential diagnosis between rheumatoid arthritis and other inflammatory arthritis
	Assessing inflammatory activity and joint structural damage in early arthritis
	Identify synovitis in patients with arthralgias or suspected diagnosis of rheumatoid arthritis
	Identify subradiological structural damage in patients in clinical remission
Systemic Autoimmune Diseases	Detect subclinical joint and periarticular inflammation
	Evaluate salivary glands for Sjögren's syndrome
	Analyzing muscle inflammation in inflammatory myositis
	Study skin involvement in systemic sclerosis
Other areas of musculoskeletal ultrasonography	Perform dynamic shoulder, elbow, wrist and hand tests
	Integrate in upper and lower limb sonoanatomy processes
	Diagnosis guidelines for hip, knee and other pathologies

## **Civil Liability Insurance**

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this educational entity undertakes to take out civil liability insurance to cover any eventuality that may arise during the stay at the internship center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. In this way, the professional will not have to worry in case he/she has to face an unexpected situation and will be covered until the end of the practical program at the center.



## **General Conditions of the Internship Program**

The general terms and conditions of the internship agreement for the program are as follows:

- 1. TUTOR: During the Hybrid Professional Master's Degree, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.
- **2. DURATION:** The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.
- 3. ABSENCE: If the students does not show up on the start date of the Hybrid Professional Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

- **4. CERTIFICATION**: Professionals who pass the Hybrid Professional Master's Degree will receive a certificate accrediting their stay at the center.
- **5. EMPLOYMENT RELATIONSHIP:** The Hybrid Professional Master's Degree shall not constitute an employment relationship of any kind.
- **6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Hybrid Professional Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.
- 7. DOES NOT INCLUDE: The Hybrid Professional Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.





## tech 42 | Where Can I Do the Clinical Internship?

The student will be able to take the practical part of this Hybrid Professional Master's Degree in the following centers:



#### Centro Médico Villanueva de la Cañada

Country Madrid Spain

Address: C. Arquitecto Juan de Herrera, 2, 28691 Villanueva de la Cañada, Madrid

Medical center with services in the main clinical specialties and diagnostic tests.

#### Related internship programs:

- Clinical Nutrition in Pediatrics
- Primary Care Clinical Ultrasound



### **Hospital HM Modelo**

Country La Coruña Spain

Address: Rúa Virrey Osorio, 30, 15011, A Coruña

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

- Anaesthesiology and Resuscitation - Palliative Care



#### Hospital Maternidad HM Belén

Country City La Coruña Spain

Address: R. Filantropía, 3, 15011 A Coruña

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

- Update in Assisted Reproduction - Hospitals and Health Services Management



#### Hospital HM San Francisco

Country City Spain León

Address: C. Marqueses de San Isidro, 11, 24004 León

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

Update in Anesthesiology and Resuscitation Trauma Nursing



### Hospital HM Regla

Country Spain León

Address: Calle Cardenal Landázuri, 2, 24003, León

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

- Update on Psychiatric Treatment in Minor Patients



## **Hospital HM Nou Delfos**

Country Spain Barcelona

Address: Avinguda de Vallcarca, 151, 08023 Barcelona

Network of private clinics, hospitals and specialized centers distributed throughout Spain

#### Related internship programs:

- Aesthetic Medicine

- Clinical Nutrition in Medicine



### **Hospital HM Madrid**

Country City Spain Madrid

Address: Pl. del Conde del Valle de Súchil, 16, 28015 Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

- Palliative Care

- Anaesthesiology and Resuscitation



### **Hospital HM Torrelodones**

Country Spain Madrid

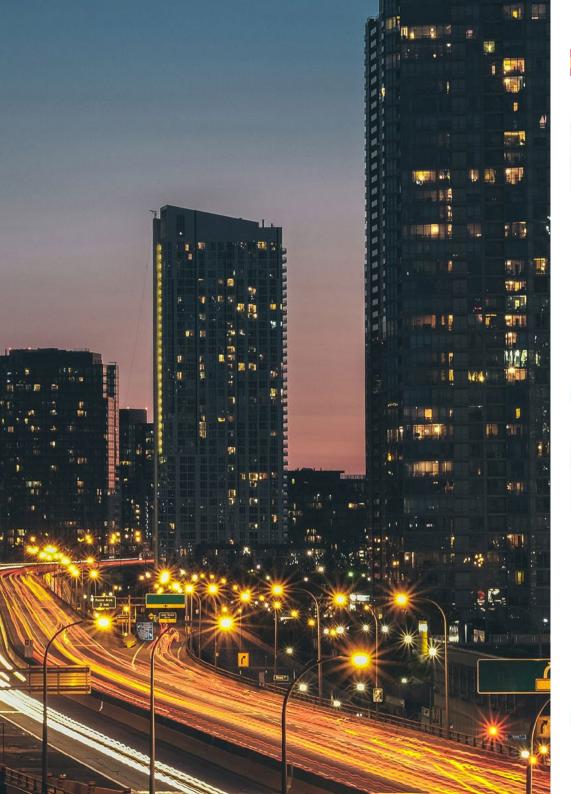
Address: Av. Castillo Olivares, s/n, 28250 Torrelodones, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

Anaesthesiology and Resuscitation

- Palliative Care



## Where Can I Do the Clinical Internship? | 43 tech



### Hospital HM Sanchinarro

Country City
Spain Madrid

Address: Calle de Oña, 10, 28050, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

- Anaesthesiology and Resuscitation - Palliative Care



#### Policlínico HM Las Tablas

Country City Spain Madrid

Address: C. de la Sierra de Atapuerca, 5, 28050, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

Trauma Nursing
- Diagnosis in Physiotherapy



### Hospital HM Puerta del Sur

Country City
Spain Madrid

Address: Av. Carlos V, 70, 28938 Móstoles, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

- Palliative Care - Clinical Ophthalmology



## Policlínico HM Moraleja

Country City
Spain Madrid

Address: P.º de Alcobendas, 10, 28109, Alcobendas, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

- Rehabilitation Medicine in Acquired Brain Injury Management

## tech 44 | Where Can I Do the Clinical Internship?





### Hospital HM Vallés

Country City
Spain Madrid



### Policlínico HM Virgen del Val

Country City
Spain Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

- Gynecologic Oncology
- Clinical Ophthalmology

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

#### Related internship programs:

- Diagnosis in Physiotherapy
- Physiotherapy in Early Care



### Policlínico HM Imi Toledo

Country City
Spain Toledo

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

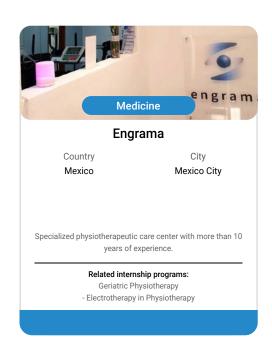
#### Related internship programs:

- Electrotherapy in Rehabilitation Medicine - Hair Transplantation





## Where Can I Do the Clinical Internship? | 45 tech





Take advantage of this opportunity to surround yourself with expert professionals and learn from their work methodology"





## tech 48 | Methodology

### 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 abundance 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:

- 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.





## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

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.



## Methodology | 51 tech

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best 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 strong socioeconomic profile and an average age of 43.5 years old.

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.

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.

## tech 52 | Methodology

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**

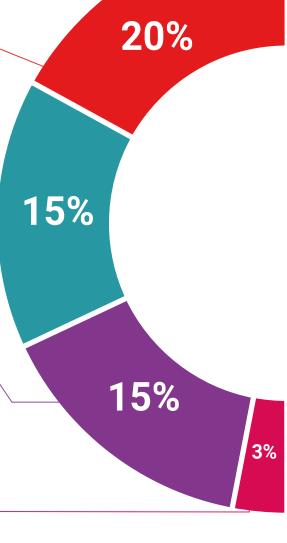
TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many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

## **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 their goals.



### Classes

There is scientific evidence on the usefulness of learning by observing experts.

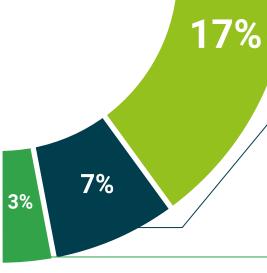
The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### **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.









## tech 56 | Certificate

This **Hybrid Professional Master's Degree in Musculoskeletal Ultrasound in Rehabilitation Medicine** contains the most complete and up-to-date program on the professional and educational field.

After the student has passed the assessments, they will receive their corresponding Hybrid Professional Master's Degree diploma issued by TECH Technological University via tracked delivery\*.

Awards the following

CERTIFICATE

to

Mr./Ms. \_\_\_\_ with identification number \_\_\_\_
For having successfully passed and accredited the following program

HYBRID PROFESSIONAL MASTER'S DEGREE

in

Musculoskeletal Ultrasound in Rehabilitation Medicine

This is a qualification awarded by this University, with a duration of 1,620 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

June 17, 2020

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In addition to the certificate, students will be able to obtain an academic transcript, as well as a certificate outlining the contents of the program. In order to do so, students should contact their academic advisor, who will provide them with all the necessary information.

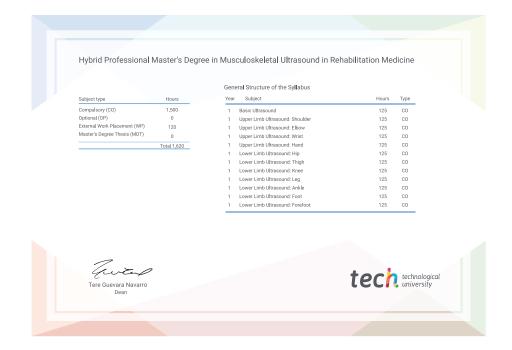
Title: Hybrid Professional Master's Degree in Musculoskeletal Ultrasound in Rehabilitation Medicine

Course Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.



<sup>\*</sup>Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

health confidence people
leducation information tutors
guarantee accreditation teaching
institutions technology learning



# Hybrid Professional Master's Degree

Musculoskeletal Ultrasound in Rehabilitation Medicine

Course Modality: Hybrid (Online + Clinical Internship)

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