



# Postgraduate Diploma

# Thoracic and Vascular Ultrasound

» Modality: online

» Duration: 6 months

» Certificate: TECH Technological University

» Dedication: 8h/week

» Schedule: at your own pace

» Exams: online

Website: www.techtitute.com/in/medicine/postgraduate-diploma/postgraduate-diploma-thoracic-vascular-ultrasound

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# tech 06 | Introduction

Thoracicand Vascular Ultrasound Scan are techniques of scanning the body, which allows the detection of any anomaly that requires medical intervention. Thanks to technological advances, their size and price have been reduced, making it easier to incorporate them into dental practices.

Going deeper into these specialties, thoracic ultrasound is very useful in the assessment of diseases of the peripheral lung parenchyma, pleura, chest wall, diaphragm and mediastinum. Among its advantages are the ability to scan in real time and the possibility of performing the scan at the patient's bedside.

On the other hand, vascular ultrasound allows rapid detection of any irregularities in the blood vessels (arteries and veins), as well as in the blood flow, making it easier for the health professional to create an accurate diagnosis of the disease.

Despite the many benefits of the incorporation of the ultrasound scanner in primary care, there are no university teaching offers at Specialist level, which contain the necessary format itinerary for the practice of ultrasound and ultrasound-guided procedures in the field of Primary Care.

With this expert you will have the opportunity to take a teaching program that brings together the most advanced and in-depth knowledge of **Thoracic and Vascular Ultrasound**, where a group of teachers of high scientific rigor and extensive international experience offers you the most complete and updated information on the use of ultrasound as a complement to the physical examination in Primary Care.

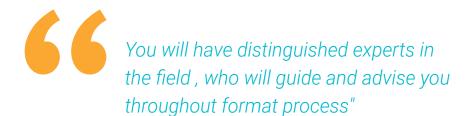
It endorses the latest advances in ultrasound with a robust and didactic teaching program, which positions it as a product of the highest scientific rigor at international level, aimed at health professionals. In addition, the program is based on a multidisciplinary approach to its subjects, which allows training and professional development in different areas:

The **Postgraduate Diploma in Thoracic and Vascular Ultrasound** contains the most complete and up-to-date scientific program on the market. The most important features of the program include:

- Development of numerous clinical cases presented by experts in ultrasound.
- 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.
- New diagnostic-therapeutic developments on evaluation, diagnosis, and intervention in problems or disorders that can be addressed with ultrasound.
- It contains practical exercises where the self-evaluation process can be carried out to improve learning.
- Algorithm-based interactive learning system for decision-making in the presented clinical situations.
- Special emphasis on evidence-based medicine and research methodologies in ultrasound processes.
- Content that is accessible from any fixed or portable device with an Internet connection.
- All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments.



Thanks to the Postgraduate Diploma in Thoracic and Vascular Ultrasound you will learn the latest advances in the specialty, to be able to perform a quality medical praxis"



Its teaching staff is made up of prestigious and renowned professionals, with extensive experience in healthcare, teaching, and research in various countries, contributing their extensive professional to this Postgraduate Diploma.

The methodological design of this master's degree, developed by a multidisciplinary team of e-learning experts, integrates the latest advances in educational technology in order to create numerous multimedia tools that allow the professional to solve real-life situations in their daily practice. These will enable you to advance by both acquiring knowledge and developing new skills in your future professional work.

The contents generated for this Postgraduate Diploma, as well as the videos, self-exams, clinical cases, and modular exams, have been thoroughly reviewed, updated, and integrated by the professors and the team of experts that make up the working group, in order to facilitate, in a gradual and educational manner, a learning process that allows the objectives of the teaching program to be achieved.

This program has been designed following the fundamentals of the e-learning methodology, allowing you to assimilate the knowledge more quickly and for a longer period of time.

Update your knowledge on advances in ultrasound diagnostics and incorporate them into your daily medical practice.







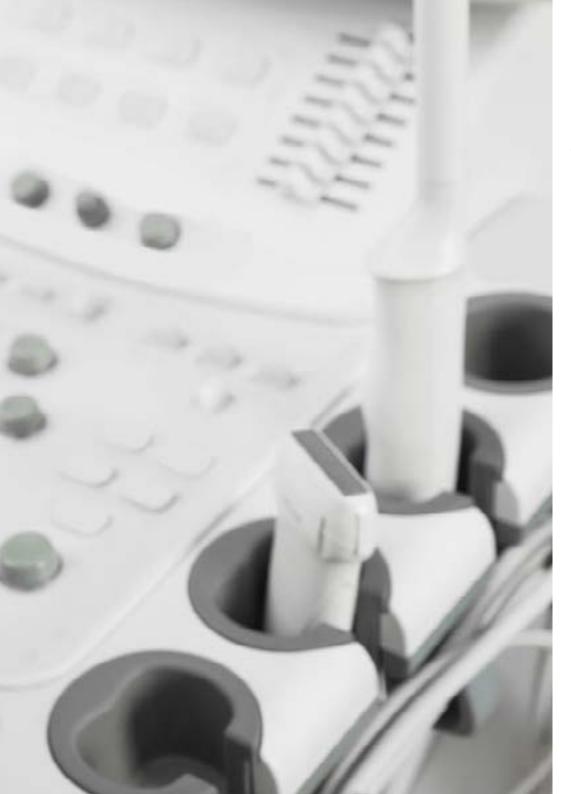
# tech 10 | Objectives



# **General Objectives**

- Acquire the necessary knowledge in the use of ultrasound, in order to manage the routine situations of their practical use in healthcare..
- Apply the skills acquired while performing the duties of an ultrasound specialist..
- Use the latest clinical developments in the day-to-day work of a medical professional..





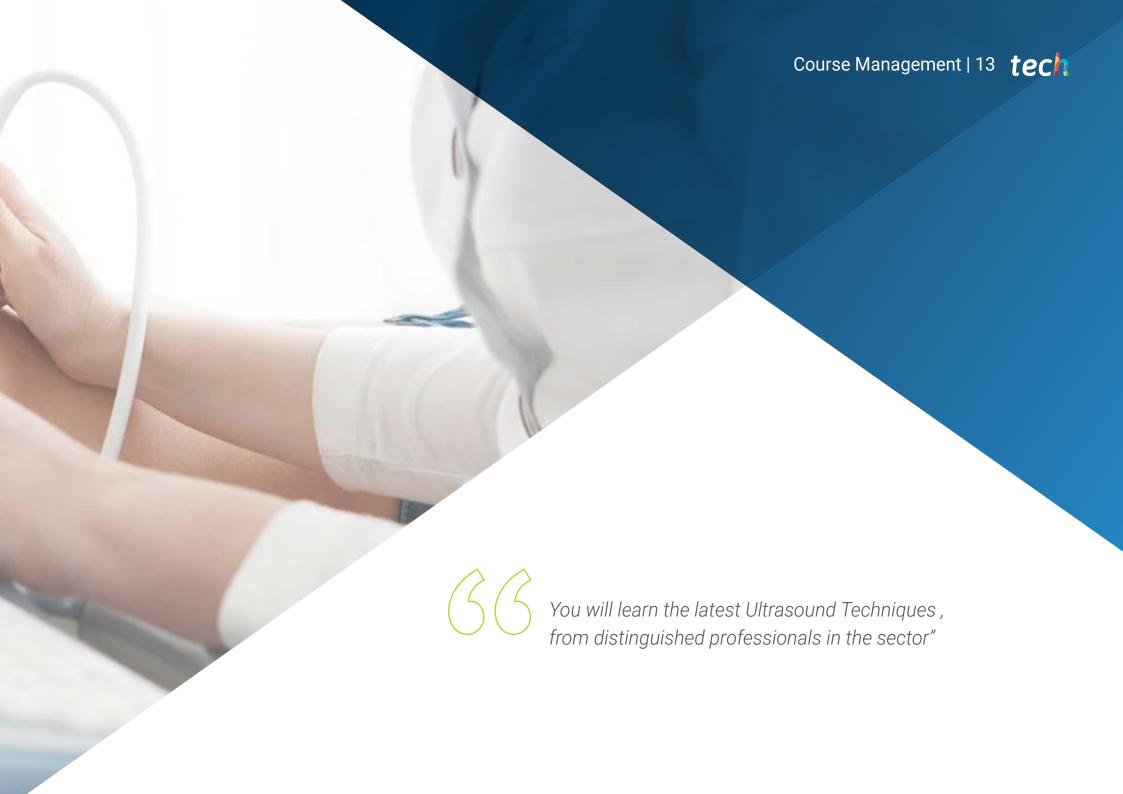
# Objectives | 11 tech



# **Specific Objectives**

- Optimize ultrasound imaging through in-depth knowledge of the physical principles of ultrasound and the controls and operation of ultrasound scanners.
- Master the basic and advanced procedures of Ultrasound, both at diagnostic and therapeutic level.
- Determine the indications and limitations of ultrasound and its application in the most common clinical situations.
- Predict the results of invasive diagnostic procedures non-invasively by using ultrasound, with the possibility of replacing them..
- Guiding invasive therapeutic procedures to minimize their risks.
- Understand how to extend the concept of Ultrasound to healthcare, research, and





# tech 14 | Course Management

### Management



### Dr. Fumadó Queral, Josep

- Family physician at Els Muntells Primary Care Center (Amposta, Tarragona).
- Graduate in Clinical Ultrasound and Training of Trainers from the University of Montpelier-Nîmes (France).
- Lecturer at the Associació Mediterrània of General Medicine
- Teacher at the Spanish School of Ultrasound of the Spanish Society of General and Family Physicians (SEMG)
- Honorary Member of the Canary Society of Ultrasound (SOCANECO) and Professor of its Annual Symposium.
- Lecturer on the Master's Degree in Clinical Ultrasound for Emergencies and Critical Care at the CEU Cardenal Herrera University.



## Dr. Pérez Morales, Luis Miguel

- Family physician at the Primary Care Center of Arucas (Gran Canaria, Canary Islands).
- Diploma in Ultrasound in Primary Care. Univ. Rovira i Virgili. Catalan Institute of Health
- Expert in Thoracic Ultrasound. University of Barcelona.
- Expert in Abdominal and Musculoskeletal Clinical Ultrasound for Emergency and Critical Care. CEU Cardenal Herrera University.
- ullet President and Professor of the Canary Society of Ultrasound (SOCANECO) and Director of its Annual Symposium
- Professor on the Master's Degree in Clinical Ultrasound for Emergency and Critical Care at the CEU Cardenal Herrera University.

#### Scientific Committee

#### Professor. Dr. Álvarez Fernández, Jesús Andrés

- Specialist in Intensive Care Medicine.
- Intensive Care Medicine and Major Burns Unit. Getafe University Hospital. Getafe, Madrid.
- Head of the Master's Degree in Clinical Ultrasound in Emergency and Critical Care, CEU Cardenal Herrera University.
- Head of the Master's Degree in Clinical Imaging in Emergency and Critical Care, CEU Cardenal Herrera University.
- Teacher in the Specialist Degree in Thoracic Ultrasound at the University of Barcelona.

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- Tutor at the Family and Community Medicine Teaching Unit in Burgos.
- Teacher at the Spanish School of Ultrasound of the Spanish Society of General and Family Physicians (SEMG).
- Member of the Spanish Society of Ultrasound (SEECO) and the Spanish Association of Prenatal Diagnosis (AEDP).

#### Professor. Dr. Jiménez Díaz, Fernando

- · Specialist in Sports Medicine.
- Professor in the Faculty of Sports Sciences at the University of Castilla La Mancha, Toledo.
- Director of the International Chair of Musculoskeletal Ultrasound of the Catholic University of Murcia.
- Teacher on the Master's Degree in Clinical Imaging in Emergency and Critical Care, CEU Cardenal Herrera University.

#### Dr. Sánchez Sánchez, José Carlos

- · Radiodiagnosis Specialist.
- Director of the Integrated Diagnostic Imaging Management Area and Intrahospital Coordinator of the Breast Cancer Early Detection Program. Poniente Hospital. El Ejido, Almería.
- Teacher on the Specialist Degree in Clinical Ultrasound for Family Physicians at the University of Barcelona.

# tech 16 | Course Management

### **Professors**

#### Dr. Arancibia Zemelman, Germán

• Radiology Department Specialis at Clínica Meds. Santiago de Chile (Chile)

### Dr. Argüeso García, Mónica

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### Dr. Donaire Hoyas, Daniel

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### Sr. Fermoso, Antonio Fabián

• Global Clinical Insights Leader Point of Care. General Electric Healthcare. Madrid

#### Sr. Gálvez Gómez, Francisco Javier

• Ultrasound Portfolio Solutions Manager España. SIEMENS Healthcare. Madrid

#### Dr. García García, Nicasio

• Family Physician (Schamann Health Center).

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### Dr. Martín del Rosario, Francisco Manuel

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# Course Management | 17 tech

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• Business Manager Ultrasound. Cannon (Toshiba) Medical Systems. Madrid

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• Specialist in Anesthesiology, Resuscitation, and Pain Management. Getafe University Hospital. Madrid

### Dr. Segura Blázquez, José María

• Family Physician. Canalejas Health Center. Las Palmas de Gran Canaria (Canary Islands).

### Professor. Dr. Santos Sánchez, José Ángel

• Specialist in the Radiology Department. Salamanca University Hospital. Salamanca

#### Dr. Wagüemert Pérez, Aurelio

• Specialist in Pulmonology. San Juan de Dios Hospital. Santa Cruz de Tenerife (Canary Islands).



# tech 20 | Structure and Content

### Module 1. Ultrasound Imaging

#### 1.1. Physical Principles

- 1.1.1. Sounds and Ultrasound.
- 1.1.2. The Nature of Sound
- 1.1.3. Interaction of Sound with Matter
- 1.1.4. The Concept of Ultrasound
- 1.1.5. Ultrasound Safety

#### 1.2. Ultrasound Sequence

- 1.2.1. Ultrasound Emission
- 1.2.2. Tissue Interaction
- 1.2.3. Echo Formation
- 1.2.4. Ultrasound Reception
- 1.2.5. Ultrasound Image Generation

#### 1.3. Ultrasound Modes

- 1.3.1. Modes A and M
- 1.3.2. Mode B.
- 1.3.3. Doppler Modes (Color, Angio, and Spectral)
- 1.3.4. Combined Modes.

#### 1.4. Ultrasound Scanners

- 1.4.1. Common Components
- 1.4.2. Classification
- 1.4.3. Transducers.

#### 1.5. Ultrasound Maps and Echonavigation

- 1.5.1. Spatial Layout
- 1.5.2. Ultrasound Maps
- 1.5.3. Transducer movements
- 1.5.4. Practical Advice

#### 1.6. Trends in Ultrasound

- 1.6.1. 3D/4D Ultrasound
- 1.6.2. Sonoelastography
- 1.6.3. Echopotentiation
- 1.6.4. Other Modes and Techniques



### Module 2. Clinical Ultrasound of the Head and Neck

#### 2.1. Anatomy Recap

- 2.1.1. Cranium and Face
- 2.1.2. Tubular Structures
- 2.1.3. Glandular Structures
- 2.1.4. Vascular Structures

#### 2.2. Ocular Ultrasound

- 2.2.1. Ultrasound Anatomy of the Eye
- 2.2.2. Ocular Ultrasound Technique
- 2.2.3. Indications and Contraindications of Ocular Ultrasonography
- 2.2.4. Ultrasound Report

#### 2.3. Ultrasound of Salivary Glands

- 2.3.1. Regional Sonoanatomy
- 2.3.2. Technical Aspects
- 2.3.3. Most Common Tumor and Non-Tumor Pathologies

#### 2.4. Thyroid Ultrasound

- 2.4.1. Ultrasound Technique
- 2.4.2. Indications
- 2.4.3. Normal and Pathological Thyroid
- 2.4.4. Diffuse Goiter

#### 2.5. Ultrasound Examination of Adenopathies

- 2.5.1. Reactive Lymph Nodes
- 2.5.2. Non-Specific Inflammatory Diseases
- 2.5.3. Specific Lymphadenitis (Tuberculosis)
- 2.5.4. Primary Lymph Node Diseases (Sarcoidosis, Hodgkin's Lymphoma, Non-Hodgkin's Lymphoma)
- 2.5.5. Lymph Node Metastases

#### 2.6. Ultrasound of the Supra-Aortic Trunks

- 2.6.1. Sonoanatomy
- 2.6.2. Scanning Protocol
- 2.6.3. Extracranial Carotid Pathology
- 2.6.4. Vertebral Pathology and Subclavian Artery Steal Syndrome

#### Module 3. Thoracic Ultrasound

#### 3.1. Thoracic Ultrasound Fundamentals

- 3.1.1. Anatomy Recap
- 3.1.2. Echoes and Artifacts in the Thorax
- 3.1.3. Technical Requirements
- 3.1.4. Exploration Systematics

#### 3.2. Ultrasound of the Chest Wall, Mediastinum, and Diaphragm

- 3.2.1. Soft Tissues
- 3.2.2. Thoracic Cage
- 3.2.3. Mediastinum
- 3.2.4. Diaphragm

#### 3.3. Pleural Ultrasound

- 3.3.1. Normal Pleura
- 3.3.2. Pleural Effusion
- 333 Pneumothorax
- 3.3.4. Solid Pleural Pathology

#### 3.4. Pulmonary Ultrasound

- 3.4.1. Pneumonia and Atelectasis
- 3.4.2. Pulmonary Neoplasms
- 3.4.3. Diffuse Lung Disease
- 3.4.4. Pulmonary Infarction

#### 3.5. Cardiac Ultrasound and Basic Hemodynamics

- 3.5.1. Normal Cardiac Sonoanatomy and Hemodynamics
- 3.5.2. Examination Technique
- 3.5.3. Structural Alterations.
- 3.5.4. Hemodynamic Alterations

#### 3.6. Trends in Thoracic Ultrasound

- 3.6.1. Pulmonary Sonoelastography
- 3.6.2. 3D/4D Thoracic Ultrasound
- 3.6.3. Other Modes and Techniques

# tech 22 | Structure and Content

### Module 4. Clinical Ultrasound of the Digestive Tract and Major Vessels

#### 4.1. Hepatic Ultrasound

- 4.1.1. Anatomy
- 4.1.2. Liquid Focal Lesions
- 4.1.3. Solid Focal Lesions
- 4.1.4. Diffuse Liver Disease
- 4.1.5 Chronic Liver Disease

#### 4.2. Ultrasound of Gallbladder and Bile Ducts

- 4.2.1. Anatomy
- 4.2.2. Cholelithiasis and Biliary Sludge
- 4.2.3. Vesicular Polyps
- 4.2.4. Cholecystitis
- 4.2.5. Bile Duct Dilatation
- 4.2.6. Bile Duct Malformations

#### 4.3. Pancreatic Ultrasound

- 4.3.1. Anatomy
- 4.3.2 Acute Pancreatitis
- 4.3.3. Chronic Pancreatitis

#### 4.4. Ultrasound of the Major Vessels

- 4.4.1. Abdominal Aortic Disease
- 4.4.2. Vena Cava Pathology
- 4.4.3. Pathology of Celiac Trunk, Hepatic Artery, and Splenic Artery
- 4.4.4. Aortomesenteric Clamp Pathology

#### 4.5. Ultrasound of the Spleen and Retroperitoneum

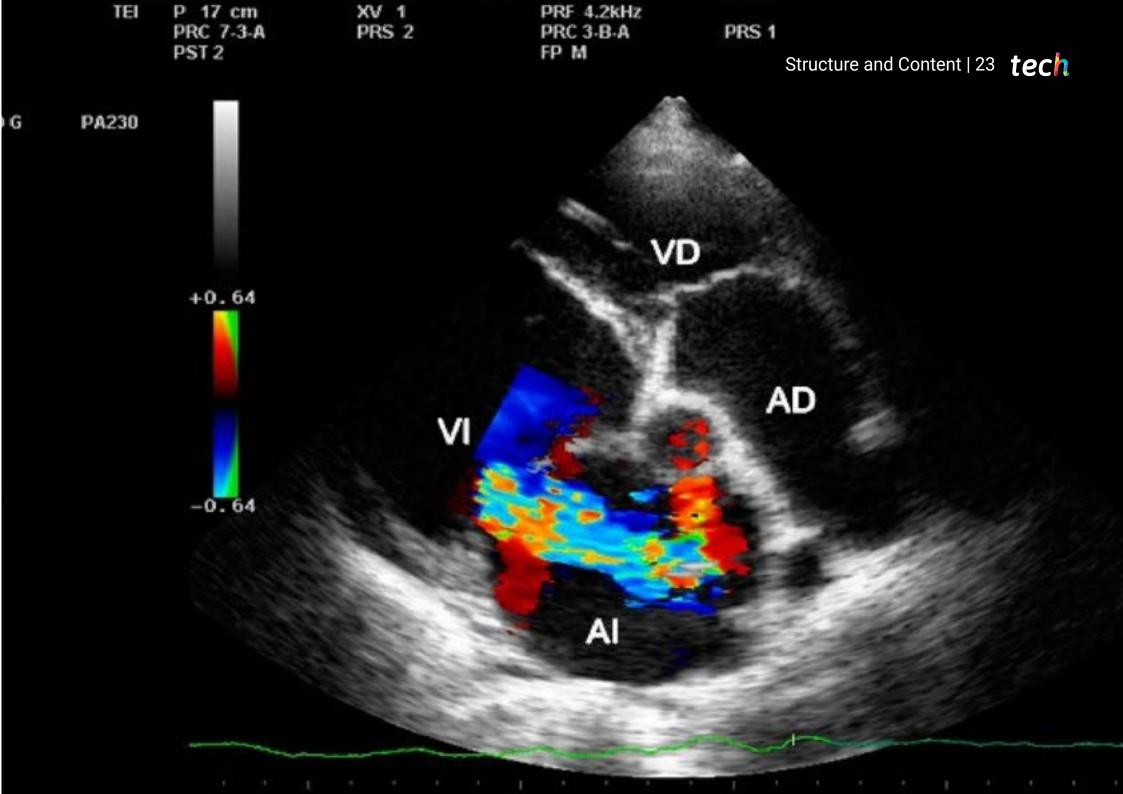
- 4.5.1. Spleen Anatomy
- 4.5.2. Splenic Focal Lesions
- 4.5.3. Study of Splenomegaly
- 4.5.4. Adrenal Gland Anatomy
- 4.5.5. Adrenal Pathology
- 4.5.6. Retroperitoneal Lesions

#### 4.6. The Digestive Tract

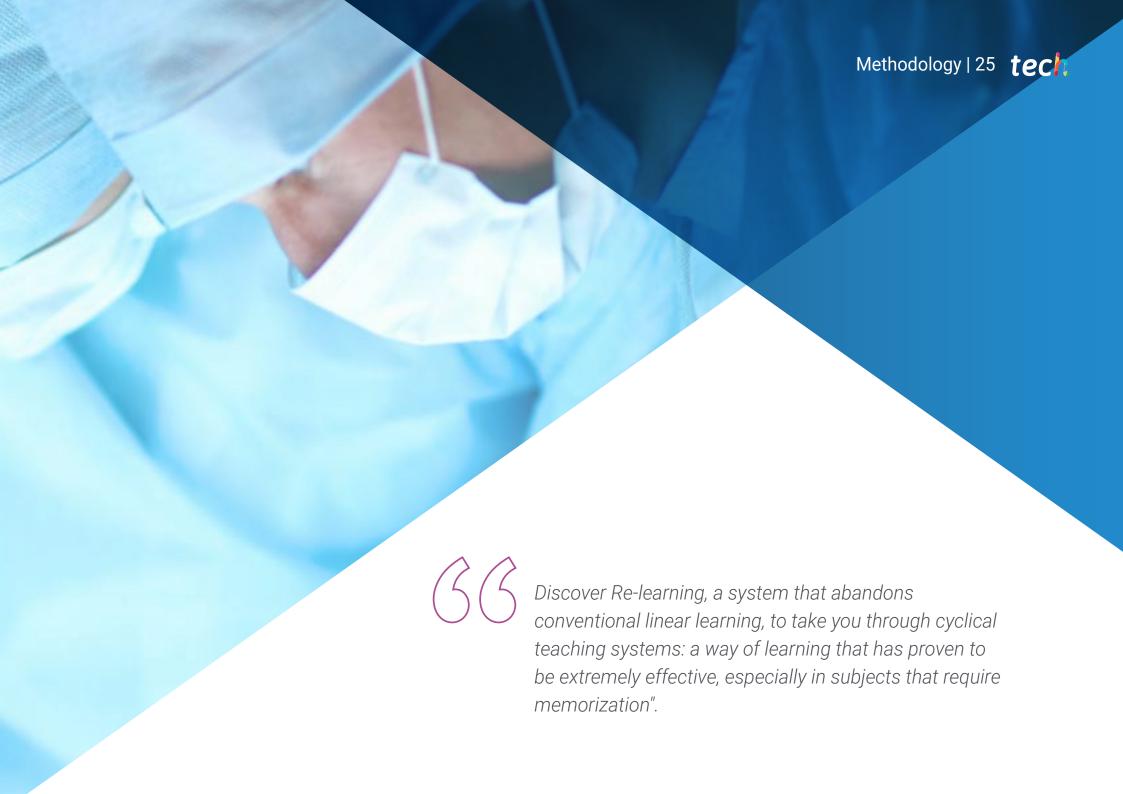
- 4.6.1. Ultrasound Examination of the Stomach
- 4.6.2. Ultrasound Examination of the Small Intestine
- 4.6.3. Ultrasound Examination of the Colon



You will have distinguished experts in the field, who will guide and advise you throughout format process"







# tech 26 | Methodology

#### At TECH we use the Case Method

In a given situation, what would you do? Throughout the program, you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is abundant scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH you can 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 potential 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 professional medical 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 grasp concepts, but also develop their mental capacity by evaluating real situations and applying their knowledge.
- 2. The learning process has a clear focus on 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.
- 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.

Our 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, which represent a real revolution with respect to simply studying and analyzing cases.

The physician will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-theart software to facilitate immersive learning.





# Metodology | 29 tech

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 we have trained more than 250,000 physicians with unprecedented success, in all clinical specialties regardless of the surgical load. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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 (we learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

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

In this program you will have access to the best educational material, prepared with you 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.

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.



### **Latest Techniques and Procedures on Video**

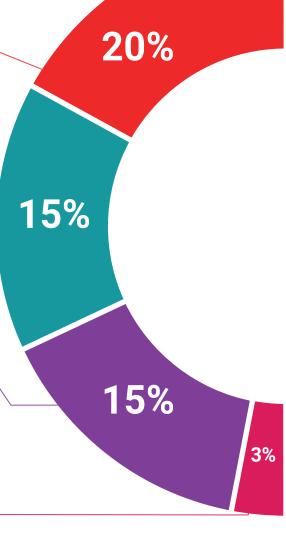
We introduce you to the latest techniques, to the latest educational advances, to the forefront of current medical techniques. All this, in first person, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



#### **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.

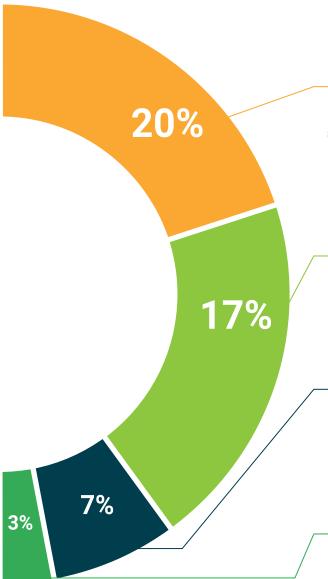
This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".





#### **Additional Reading**

Recent articles, consensus documents, international guides. in our virtual library you will have access to everything you need to complete your training.



### **Expert-Led Case Studies and Case Analysis**

Effective learning ought to be contextual. Therefore, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



#### **Testing & Re-testing**

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



#### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.



Learning from an expert strengthens knowledge and memory, and generates confidence in our future difficult decisions.

#### **Quick Action Guides**

We offer you the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning.





# tech 34 | Certificate

This **Postgraduate Diploma in Thoracic and Vascular Ultrasound** contains the most complete and up-to-date scientific program on the market.

After the student has passed the evaluations, they will receive by mail with acknowledgment of receipt their corresponding **Postgraduate Diploma** issued by **TECH Technological University**.

Title: Postgraduate Diploma in Thoracic and Vascular Ultrasound
Official Number of Hours: 450 hours.



#### **POSTGRADUATE DIPLOMA**

For having passed and accredited the following program

in

#### Thoracic and Vascular Ultrasound

This is a qualification awarded by this University, equivalent to 500 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

Fere Guevara Navarro

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each con-

Jnique TECH Code: AFWORD23S techtitute.com/certificate



# Postgraduate Diploma

Thoracic and Vascular Ultrasound

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 8h/week
- » Schedule: at your own pace
- » Exams: online

