Advanced Master's Degree
Clinical Ultrasound

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Advanced Master's Degree
Clinical Ultrasound

- Modality: **online**
- Duration: **2 years**
- Certificate: **TECH Global University**
- Credits: **120 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

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01

Introduction

Ultrasound is one of the fields of medical care that has evolved the most in recent decades, becoming an essential tool in the management of all types of patients. This discipline has evolved so much that it has gone from being restricted to radiodiagnosis to being applied in practically all medical areas. The main objective of this program is to update the knowledge of healthcare professionals in the use of ultrasound, both in primary care and in cases of emergencies and critical care.

We offer you a quality specialization with which you can expand your competences in the health secor. A high-level specialization for professionals seeking to achieve career success".

Clinical ultrasound or point-of-care ultrasound is the technique of ultrasound examination of the body that is used for the practical practice of medicine, related to the direct observation of the patient and their treatment. Using this system enhances the ability to diagnose and treat patients. As such, it has become a popular and valuable tool for guiding diagnostic and therapeutic interventions.

Additionally, technological advances have made it possible to reduce the size of the equipment, making it cheaper and more portable, help increased from the capabilities of clinical ultrasound, achieving a notable increase in its use in various situations.

Clinical ultrasound an impact on each of the six fundamental domains of the current concept of quality of care: patient safety, effectiveness, efficiency, equity, timeliness and humanization. As a result, its use is effective and has become widespread both in primary care and in patients in emergency or critical care situations.

Throughout this Advanced Master's Degree, the student will be exposed to all the current approaches to the different challenges of his profession. A high-level step that will become a process of improvement, not only on a professional level, but also on a personal level.

This challenge is one of TECH's social commitments: to help highly qualified professionals specialize and develop their personal, social and work skills during the course of their studies.

We will not only take you through the theoretical knowledge we offer, but we will introduce you to another way of studying and learning, one which is simpler, more organic, and efficient. We will work to keep you motivated and to create in you a passion for learning. We will push you to think and develop critical thinking.

This **Advanced Master's Degree in Clinical Ultrasound** contains the most complete and up-to-date educational program on the market. The most important features include:

- The latest technology in e-learning software
- Intensely visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand.
- Practical case studies presented by practising experts
- State-of-the-art interactive video systems
- Teaching supported by telepractice
- Continuous updating and recycling systems
- Self-regulated learning: full compatibility with other occupations
- Practical exercises for self-assessment and learning verification
- Support groups and educational synergies: questions to the expert, debate and knowledge forums
- Communication with the teacher and individual reflection work.
- Content that is accessible from any fixed or portable device with an Internet connection
- Supplementary documentation databases are permanently available, even after the program

A high level scientific educational program, supported by advanced technological development and the teaching experience of the best professionals"

An educational program created for professionals who aspire to excellence that will allow you to acquire new skills and strategies in a smooth and effective way".

Our teaching staff is made up of working professionals. In this way we ensure that we deliver the educational update we are aiming for. A multidisciplinary staff of trained and experienced professionals from a variety of environments, who will develop theoretical knowledge in an efficient manner, but above all, will put at the service of specialization the practical knowledge derived from their own experience.

This command of the subject is complemented by the effectiveness of the methodological design of this Grand Master. Developed by a multidisciplinary team of *e-learning* experts, it integrates the latest advances in educational technology. In this way, you will be able to study with a range of easy-to-use and versatile multimedia tools that will give you the necessary skills you need for your specialization.

The design of this program is based on Problem-Based Learning, an approach that conceives learning as a highly practical process. To achieve this remotely, we will use telepractice. With the help of an innovative interactive video system and *Learning from an Expert*, you will be able to acquire the knowledge as if you were facing the scenario you are currently learning about. A concept that will allow you to integrate and fix learning in a more realistic and permanent way.

A deep and complete program about the strategies and approaches in the application of Clinical Ultrasound.

We have the best teaching methodology and a multitude of simulated cases that will help you prepare for real situations.

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Objectives

Our objective is to prepare highly qualified professionals for the working An objective that is complemented, moreover, in a global manner, by promoting human development that lays the foundations for a better society. This objective is focused on helping professionals reach a much higher level of expertise and control. A goal that you will be able to achieve thanks to a highly intensive and detailed course.

If your goal is to improve in your profession, to acquire a qualification that will enable you to compete among the best, then look no further: welcome to TECH"

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.
- Turn physicians into masters in the use of ultrasound for the management of emergency situations and critical patients, regardless of the environment in which they find themselves

We are the largest online university in the world and we want to help you improve your future"

Specific Objectives

Primary Care Clinical Ultrasound

- 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
- Excel in spatial orientation or "echonavigation".
- Practice all ultrasound modes in the safest way for the patient.
- Know the indications and limitations of clinical ultrasound and its application in the most frequent 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 Clinical Ultrasound to healthcare, research, and academic environments

Clinical Ultrasound in Emergencies and Critical Care

- Explain the cardiac anatomy
- Describe the technical requirements of cardiac ultrasound
- Explain localization and visualization in pericardial windows
- Describe sonoanatomy and sonophysiology in cardiac ultrasound
- Explain the different structural alterations to identify in cardiac ultrasound
- Define the principles of hemodynamic ultrasound
- Explain the thoracic anatomy
- Describe the technical requirements of thoracic ultrasounds
- Explain the examination technique of thoracic ultrasounds
- Explain the principles of ultrasounds of the thoracic wall, the pleura and the mediastinum
- Define the principles of pulmonary ultrasounds
- Define the principles of diaphragmatic ultrasounds
- Explain the vascular anatomy
- Describe the technical requirements of vascular ultrasounds
- Explain the examination technique for vascular ultrasounds
- Explain the principles of ultrasound for the main thoracoabdominal vessels
- Define the principles of ultrasounds of the supra-aortic trunks.
- Explain the principles of ultrasound of peripheral arterial circulation

- Describe cerebral hemodynamics
- Explain the location and visualization of the windows in cerebral ultrasounds
- Define the different ultrasound modes in cerebral ultrasounds
- Explain the examination technique for cerebral ultrasounds.
- Explain the different structural alterations to identify in cerebral ultrasounds
- Explain the different hemodynamic alterations to identify in cerebral ultrasound
- Describe the process for performing an ocular ultrasound
- Explain the abdominal anatomy
- Describe the technical requirements of abdominal ultrasounds
- Explain the examination technique for abdominal ultrasounds
- Explain the Eco-FAST methodology
- Explain the principles of ultrasound of the digestive system
- Explain the principles of genitourinary ultrasound
- Explain the anatomy of the musculoskeletal system
- Describe the technical requirements of musculoskeletal ultrasound
- Explain the examination technique for musculoskeletal ultrasounds
- Define the sonoanatomy of the locomotor system
- Explain the principles of the most common acute locomotor system injuries
- Explain the use of ultrasounds in cardiac arrest
- Describe the use of ultrasound in cases of shock
- Explain the use of ultrasounds in respiratory failure

- Describe the use of ultrasound in cases of sepsis
- Explain the use of ultrasounds in abdominal pain
- Describe the use of ultrasound in trauma cases
- Explain the use of ultrasounds in strokes
- Explain the process of performing ultrasound-guided intubation
- Describe the technique for vascular cannulation using ultrasound
- Explain the process of performing thoracentesis using ultrasound
- Describe the technique of ultrasound-guided pericardiocentesis
- Explain the process of performing paracentesis with ultrasound support
- Explain the process of performing ultrasound-guided lumbar puncture
- Describe the technique for performing ultrasound-guided drainage and probing
- Describe the technical requirements of pediatric ultrasounds
- Explain the examination technique for pediatric ultrasounds
- Describe pediatric sonoanatomy and sonophysiology
- Explain the use of ultrasound in the major pediatric syndromes

03

Skills

Once all the contents have been studied and the objectives of the Advanced Master's Degree in Clinical Ultrasound have been achieved, the health professional will have gained superior expertise and performance in this field. A very complete approach, in a high-level specialization program that truly makes the difference.

Achieving excellence in any profession requires effort and perseverance, but, above all, the support of professionals, who provide you with the boost you need, with the necessary means and support. At TECH, we offer you everything you need"

General Skills

- Apply the contents learned in resolving the main health problems in the field of Clinical Ultrasound.
- Develop learning to learn as one of the most important skills for any professional nowadays, who is obliged to constantly specialize and improve their professional skills due to the dizzying and fast-paced process of scientific knowledge production.
- Increase diagnostic abilities through the use of ultrasound for their patients' healthcare.
- Develop skills for self-improvement, in addition to being able to provide knowledge and professional improvement activities due to the high level of scientific and professional preparation acquired with this program.

Our goal is very simple: to offer you a quality specialization with the best teaching system of the moment, so that you can achieve excellence in your profession".

Specific Skills

- Use ultrasound imaging with sufficient ability to integrate common diagnostic processes in primary care
- Optimize ultrasound imaging through in-depth knowledge of the physical principles of ultrasound and the controls and operation of ultrasound
- Understand basic and advanced ultrasound procedures, both diagnostic and therapeutic
- Excel in spatial orientation or "econavigation"
- Practice all ultrasound modes in the safest way for the patient
- Determine the indications and limitations of clinical 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 Clinical Ultrasound to healthcare and academic environments

04

Course Management

The program's teaching staff includes leading experts in Clinical Ultrasound, who contribute their vast work experience to this specialization program. Additionally, other recognized specialists participate in its design and preparation, which means that the program is developed in an interdisciplinary manner.

We have an excellent team of professionals who have come together to teach you the latest advances in clinical ultrasound"

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 of the Course of Ultrasound in Primary Care Univ Rovira y Virgili Institut Catalá de la Salut
- Postgraduate Diploma in Thoracic Ultrasound at the University of Barcelona
- Expert in Abdominal and Musculoskeletal Clinical Ultrasound for Emergency and Critical Care CEU Cardenal Herrera University
- 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

Dr. Álvarez Fernández, Jesús Andrés

- Degree in Medicine and Surgery
- Specialist in Intensive Care Medicine.
- Doctor of Medicine (PhD)
- Attending Physician of Intensive Care Medicine and Major Burns Getafe University Hospital, Madrid
- Collaborating Professor of the Master's Degree in Intensive Care Medicine at the CEU Cardenal Herrera University of Valencia.
- Founding Member of the Ecoclub of SOMIAMA
- Collaborating Professor of SOCANECO

Coordinators

Dr. Flores Herrero, Ángel

- Degree in Medicine and Surgery
- Attending Physician of Vascular Surgery.
- Toledo Hospital Complex.
- Member of the American Society of Surgeons.
- Collaborating Professor at the Catholic University San Antonio de Murcia (UCAM)

Dr. Igeño Cano, José Carlos

- Degree in Medicine and Surgery
- Specialist in Intensive Care Medicine.
- Head of the Intensive Care and Emergency Department at San Juan de Dios Hospital in Córdoba
- Member of the HU-CI Project

- Creator and Director of Course of Ecoguided Venous Canalization (CAVE)

Dr. Osiniri Kippes, María Inés

- Degree in Medicine and Surgery
- Pediatrician.
- Pediatrics, Pediatric Ultrasound and Pediatric Nephrology Bofill Clinic
- Collaborating Professor at the Spanish School of Clinical Ultrasound.
- Member of the European Federation of Societies of Ultrasound in Medicine and Biology (EFSUMB)

Dr. Jiménez Díaz, Fernando

- Degree in Medicine and Surgery
- Specialist in Sport Medicine.
- Professor in the Faculty of Sports Sciences at the University of Castilla La Mancha.
- Director of the International Chair of Musculoskeletal Ultrasound of the Catholic University of Murcia

Dr. Vicho Pereira, Raúl

- Degree in Medicine and Surgery
- Specialist in Intensive Care Medicine, Quirónsalud Palmaplanas , Palma de Mallorca Hospital
- President of the Spanish Society for Ultrasound in Critical Cases (ECOCRITIC)

Dr. Vollmer Torrubiano, Iván

- Degree in Medicine and Surgery
- Medical Specialist in Radiology, Clinic i Provincial University Hospital, Barcelona.
- Director in the Specialist Degree in Thoracic Ultrasound at the Autonomous University of Barcelona.
- Collaborator of EcoClub of SOMIAMA and collaborator of SOCANECO

Scientific Committee

Dr. Álvarez Fernández, Jesús Andrés

- Specialist in Intensive Care Medicine
- Intensive Care Medicine and Major Burns Service, 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

Dr. Herrera Carcedo, Carmelo

- Family Physician and Head of the Ultrasound Unit at the Briviesca Health Center (Burgos)
- 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).

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 for 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 at El Poniente Hospital, El Ejido, Almeria
- Teacher on the Specialist Degree in Clinical Ultrasound for Family Physicians at the University of Barcelona

Professors

Dr. Arancibia Zemelman, Germán
- Radiology Department Specialis at Clínica Meds Santiago in Santiago de Chile (Chile)

Dr. Argüeso García, Mónica
- Department of Intensive Care Medicine Complejo Materno Insular at Gran Canaria Las Palmas de Gran Canaria (Canary Islands)

Dr. Barceló Galíndez, Juan Pablo
- Specialist in Occupational Medicine and medical sonographer at Mutualia Bilbao

Dr. Cabrera González, Antonio José
- Family Doctor at Tamaraceite Las Palmas de Gran Canaria Health Center (Canary Islands)

Dr. Corcoll Reixach, Josep
- Family Physician at Tramuntana Health Center (Mallorca, Balearic Islands)

Dr. De Varona Frolov, Serguei
- Specialist at General University Hospital of Gran Canaria Dr. Negrín. Las Palmas de Gran Canaria (Canary Islands)

Dr. Donaire Hoyas, Daniel
- Specialist in Orthopedic Surgery and Traumatology Hospital de Poniente El Ejido, Almeria

Sr. Fermoso, Antonio Fabián
- Global Clinical Insights Leader Point of Care General Electric Healthcare, Madrid

Dr. Gálvez Gómez, Francisco Javier
- Ultrasound Portfolio Solutions Manager España SIEMENS Healthcare, Madrid

Dr. García García, Nicasio
- Family Physician (Schamann Health Center).

Dr. Herrero Hernández, Raquel
- Specialist in the Department of Intensive Care Medicine and Major Burns at Getafe University Hospital, Madrid

Dr. Igeño Cano, José Carlos
- Head of the Emergency and Intensive Care Department at San Juan de Dios Hospital in Córdoba

Dr. León Ledesma, Raquel
- Specialist in General and Digestive System Surgery and Obstetrics and Gynecology at Getafe University Hospital

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- Family Physician and Attending in the Intensive Care and Major Burns Departments, Getafe Hospital (Madrid.

Dr. López Rodríguez, Lucía
- Specialist in the Department of Intensive Care Medicine and Major Burns at Getafe University Hospital, Madrid

Dr. Martín del Rosario, Francisco Manuel
- Rehabilitation Specialist at Insular University Hospital Complex Maternity and Infant, Las Palmas de Gran Canaria

Mr. Moreno Valdés, Javier
- Business Manager Ultrasound Cannon (Toshiba) Medical Systems Madrid

Dr. Núñez Reiz, Antonio
- Specialist in Intensive Medicine at San Carlos Clinical University Hospital, Madrid

Dr. Ortigosa Solorzano, Esperanza
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Professor. Dr. Santos Sánchez, José Ángel
- Specialist in the Radiology Department at Salamanca University Hospital

Dr. Wagüemert Pérez, Aurelio
- Specialist in Pneumology Hospital San Juan de Dios Santa Cruz de Tenerife (Canary Islands)

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- Degree in Medicine and Surgery
- Specialist in Intensive Care Medicine.
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Dr. De la Calle Reviriego, Braulio

- Degree in Medicine and Surgery
- Specialist in Intensive Care Medicine.
- Head of the Department of Intensive Care Medicine and Transplants Coordinator Gregorio Marañón General University Hospital, Madrid
- Collaborating Professor at the Complutense University of Madrid.
- Trainer in Brain Ultrasound of the National Transplant Organization.

Dr. Hernández Tejedor, Alberto

- Degree in Medicine and Surgery
- Specialist in Intensive Care Medicine.
- Attending Physician of Intensive Care Medicine, Alcorcón Foundation University Hospital, Madrid
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Dr. Núñez Reiz, Antonio

- Degree in Medicine and Surgery
- Specialist in Intensive Care Medicine.
- Assistant Physician, Intensive Care Medicine Department, San Carlos University Hospital, Madrid.
- Collaborating Professor of the Postgraduate Diploma in Thoracic Ultrasound of the Autonomous University of Barcelona.
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- Collaborating Professor of SOCANECO

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- Medical Specialist in Physical Education and Sports Medicine
- Professor of Physical Education and Sports at the University of León.
- Expert in Ultrasound MSK (SEMED-FEMEDE)

Dr. Yus Teruel, Santiago

- Degree in Medicine and Surgery
- Specialist in Intensive Care Medicine.
- Attending Physician in Intensive Medicine.
- La Paz- Carlos III University Hospital
- Member of the Ecoclub of SOMIAMA.

05

Structure and Content

The contents of this specialisation have been developed by the different teachers of this program, with a clear purpose: to ensure that our students acquire each and every one of the necessary skills to become true experts in this field. The content of this Advanced Master's Degree will allow you to learn all aspects of the different disciplines involved in this area. A complete and well-structured program that will take you to the highest standards of quality and success.

Through a very well-structured program, you will be able to access the most advanced knowledge of the moment in Clinical Ultrasound"

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. A and M Modes
- 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

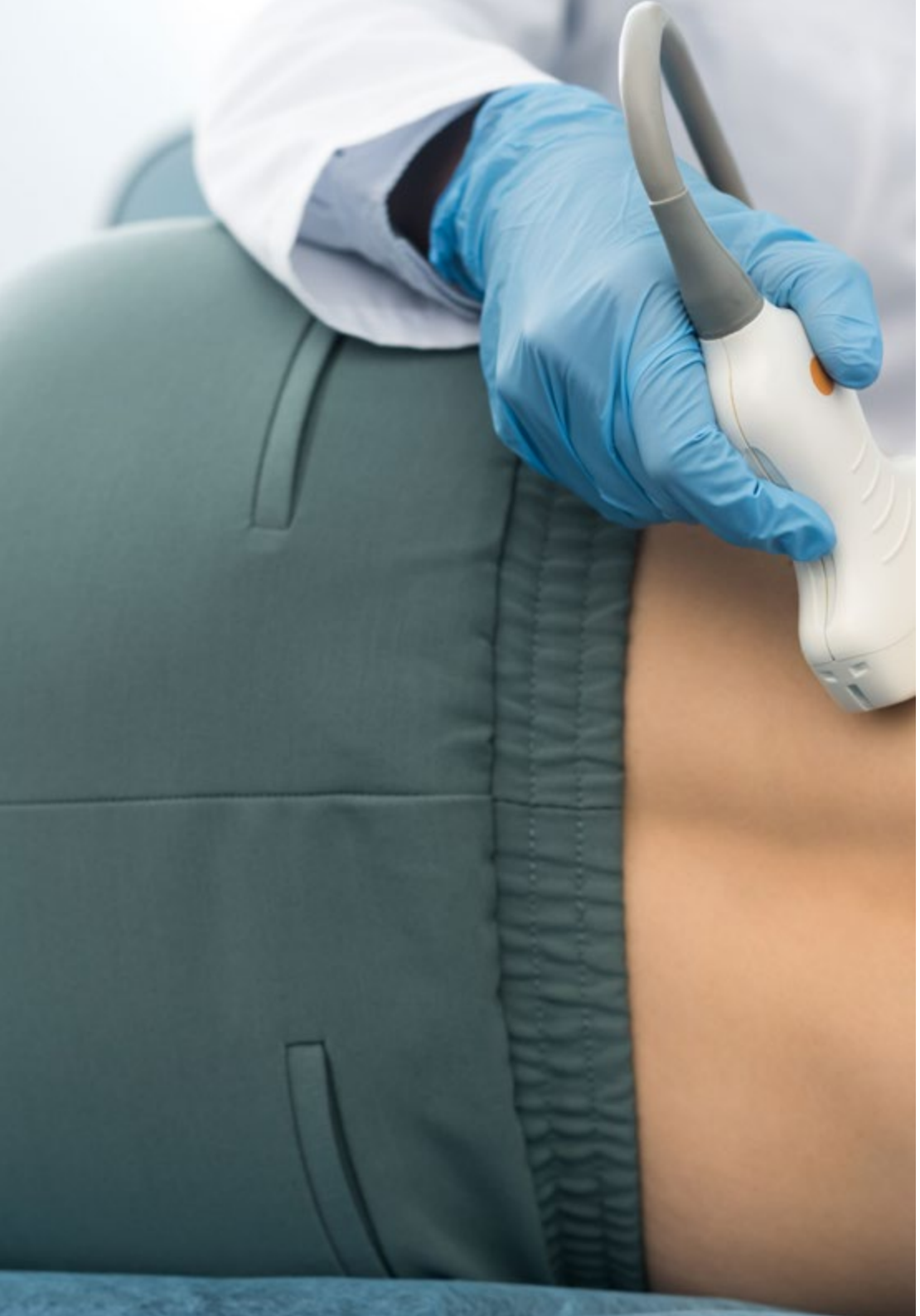
2.2. Ocular Ultrasound
- 2.2.1. Ultrasound Anatomy of the Eye
- 2.2.2. Ocular Ultrasound Technique
- 2.2.3. Indications and Contraindications of Ocular Ultrasound
- 2.2.4. Ultrasound Report

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. Clinical Ultrasound of the Digestive Tract and Major Vessels

3.1. Hepatic Ultrasound
- 3.1.1. Anatomy
- 3.1.2. Liquid Focal Lesions
- 3.1.3. Solid Focal Lesions
- 3.1.4. Diffuse Liver Disease
- 3.1.5. Chronic Liver Disease

3.2. Ultrasound of Gallbladder and Bile Ducts
- 3.2.1. Anatomy
- 3.2.2. Cholelithiasis and Biliary Sludge
- 3.2.3. Vesicular Polyps
- 3.2.4. Cholecystitis
- 3.2.5. Bile Duct Dilatation
- 3.2.6. Bile Duct Malformations

3.3. Pancreatic Ultrasound
- 3.3.1. Anatomy
- 3.3.2. Acute Pancreatitis
- 3.3.3. Chronic Pancreatitis

3.4. Ultrasound of the Major Vessels
- 3.4.1. Abdominal Aortic Disease
- 3.4.2. Vena Cava Pathology
- 3.4.3. Pathology of Celiac Trunk, Hepatic Artery, and Splenic Artery.
- 3.4.4. Aortomesenteric Clamp Pathology

3.5. Ultrasound of the Spleen and Retroperitoneum
- 3.5.1. Spleen Anatomy
- 3.5.2. Splenic Focal Lesions
- 3.5.3. Study of Splenomegaly
- 3.5.4. Adrenal Gland Anatomy
- 3.5.5. Adrenal Pathology
- 3.5.6. Retroperitoneal Lesions

3.6. The Digestive Tract
- 3.6.1. Ultrasound Examination of the Stomach
- 3.6.2. Ultrasound Examination of the Small Intestine
- 3.6.3. Ultrasound Examination of the Colon

Module 4. Clinical Genitourinary Ultrasound

4.1. Kidneys and Urinary Tract
- 4.1.1. Anatomy Recap
- 4.1.2. Structural Alterations
- 4.1.3. Hydronephrosis. Urinary Tract Dilation
- 4.1.4. Kidney Stones, Cysts, and Tumors
- 4.1.5. Renal Insufficiency

4.2. Urinary Bladder
- 4.2.1. Anatomy Recap
- 4.2.2. Ultrasound Characteristics
- 4.2.3. Benign Bladder Pathology
- 4.2.4. Malignant Bladder Pathology

4.3. Prostate and Seminal Vesicles
- 4.3.1. Anatomy Recap
- 4.3.2. Ultrasound Characteristics
- 4.3.3. Benign Prostatic Pathology
- 4.3.4. Malignant Prostatic Pathology
- 4.3.5. Benign Seminal Pathology
- 4.3.6. Malignant Seminal Pathology

4.4. The Scrotum
- 4.4.1. Anatomy Recap
- 4.4.2. Ultrasound Characteristics
- 4.4.3. Benign Scrotal Pathology
- 4.4.4. Malignant Scrotal Pathology

4.5. The Uterus
- 4.5.1. Anatomy Recap
- 4.5.2. Ultrasound Characteristics
- 4.5.3. Benign Uterine Pathology
- 4.5.4. Malignant Uterine Pathology

4.6. The Ovaries
- 4.6.1. Anatomy Recap
- 4.6.2. Ultrasound Characteristics of the Ovaries
- 4.6.3. Benign Ovarian Pathology
- 4.6.4. Malignant Ovarian Pathology

Module 5. Musculoskeletal Clinical Ultrasound

5.1. Anatomy Recap
- 5.1.1. Anatomy of the Shoulder
- 5.1.2. Anatomy of the Elbow
- 5.1.3. Anatomy of the Wrist and Hand
- 5.1.4. Anatomy of the Hip and Thigh
- 5.1.5. Anatomy of the Knee
- 5.1.6. Anatomy of the Ankle, Foot, and Leg

5.2. Technical Requirements
- 5.2.1. Introduction
- 5.2.2. Musculoskeletal Ultrasound Equipment
- 5.2.3. Ultrasound Imaging Methods
- 5.2.4. Validation, Reliability, and Standardization
- 5.2.5. Ultrasound-Guided Procedures

5.3. Examination Technique
- 5.3.1. Basic Concepts in Ultrasound
- 5.3.2. Rules for Correct Examination
- 5.3.3. Examination Technique in Ultrasound Study of the Shoulder
- 5.3.4. Examination Technique in Ultrasound Study of the Elbow
- 5.3.5. Examination Technique in Ultrasound Study of the Wrist and Hand
- 5.3.6. Examination Technique in Ultrasound Study of the Hip
- 5.3.7. Examination Technique in Ultrasound Study of the Thigh
- 5.3.8. Examination Technique in Ultrasound Study of the Knee
- 5.3.9. Examination Technique in Ultrasound Study of the Leg and Ankle

5.4. Sonoanatomy of the Musculoskeletal System: I. Upper Extremities
- 5.4.1. Introduction
- 5.4.2. Shoulder Ultrasound Anatomy
- 5.4.3. Elbow Ultrasound Anatomy
- 5.4.4. Wrist and Hand Ultrasound Anatomy

5.5. Sonoanatomy of the Musculoskeletal System: II. Lower Extremities
- 5.5.1. Introduction
- 5.5.2. Hip Ultrasound Anatomy
- 5.5.3. Thigh Ultrasound Anatomy
- 5.5.4. Knee Ultrasound Anatomy
- 5.5.5. Ultrasound Anatomy

5.6. Ultrasound in the Most Frequent Acute Injuries of the Musculoskeletal System
- 5.6.1. Introduction
- 5.6.2. Muscle Injuries
- 5.6.3. Tendon Injuries
- 5.6.4. Ligament Injuries
- 5.6.5. Subcutaneous Tissue Injuries
- 5.6.6. Bone Injuries and Joint Injuries
- 5.6.7. Peripheral Nerve Injuries

Module 6. Clinical Vascular Ultrasound in Primary Care

6.1. Vascular Ultrasound
- 6.1.1. Description and Applications
- 6.1.2. Technical Requirements
- 6.1.3. Procedure
- 6.1.4. Interpretation of Results. Risks and Benefits
- 6.1.5. Limitations

6.2. Doppler
- 6.2.1. Fundamentals
- 6.2.2. Applications
- 6.2.3. Types of Echo-Doppler
- 6.2.4. Color Doppler
- 6.2.5. Power Doppler
- 6.2.6. Dynamic Doppler

6.3. Normal Ultrasound of the Venous System
- 6.3.1. Anatomy Recap: Venous System of the Upper Extremities
- 6.3.2. Anatomy Recap: Venous System of the Lower Extremities
- 6.3.3. Normal Physiology
- 6.3.4. Regions of Interest
- 6.3.5. Functional Tests
- 6.3.6. Report. Vocabulary

6.4. Upper Extremity Chronic Venous Disease
- 6.4.1. Definition
- 6.4.2. CEAP Classification.
- 6.4.3. Morphological Criteria
- 6.4.4. Examination Technique
- 6.4.5. Diagnostic Manoeuvres
- 6.4.6. Type of Report

6.5. Acute/Subacute Vascular Thrombosis of the Upper Extremities
- 6.5.1. Anatomy Recap
- 6.5.2. Manifestations of Vascular Thrombosis of the Upper Extremities
- 6.5.3. Ultrasound Characteristics
- 6.5.4. Examination Technique
- 6.5.5. Diagnostic Manoeuvres
- 6.5.6. Technical Limitations

6.6. Acute/Subacute Vascular Thrombosis of the Lower Extremities
- 6.6.1. Description
- 6.6.2. Manifestations of Vascular Thrombosis of the Lower Extremities
- 6.6.3. Ultrasound Characteristics
- 6.6.4. Examination Technique
- 6.6.5. Differential Diagnosis
- 6.6.6. Vascular Report

Module 7. Clinical Ultrasound in Emergencies

7.1. Ultrasound in Respiratory Failure
- 7.1.1. Spontaneous Pneumothorax
- 7.1.2. Bronchospasm
- 7.1.3. Pneumonia
- 7.1.4. Pleural Effusion
- 7.1.5. Heart Failure

7.2. Ultrasound in Shock and Cardiac Arrest
- 7.2.1. Hypovolemic Shock
- 7.2.2. Obstructive Shock
- 7.2.3. Cardiogenic Shock
- 7.2.4. Distributive Shock
- 7.2.5. Cardiac Arrest

7.3. Ultrasound in Polytrauma: Eco-FAST
- 7.3.1. Pericardial Effusion
- 7.3.2. Hemothorax and Pneumothorax
- 7.3.3. Hepatorenal or Perihepatic Effusion
- 7.3.4. Splenorenal or Perisplenic Effusion
- 7.3.5. Perivesical Effusion
- 7.3.6. Post-Traumatic Aortic Dissection
- 7.3.7. Musculoskeletal Injuries

7.4. Genitourinary Emergencies
- 7.4.1. Obstructive Uropathy
- 7.4.2. Uterine Emergencies
- 7.4.3. Ovarian Emergencies
- 7.4.4. Bladder Emergencies
- 7.4.5. Prostatic Emergencies. Scrotal Emergencies

7.5. Acute Abdomen
- 7.5.1. Cholecystitis
- 7.5.2. Pancreatitis
- 7.5.3. Mesenteric Ischemia
- 7.5.4. Appendicitis
- 7.5.5. Perforation of the Hollow Viscus

7.6. Ultrasound in Sepsis
- 7.6.1. Hemodynamic Diagnosis
- 7.6.2. Source Detection
- 7.6.3. Handling of Liquids

Module 8. Ultrasound-Guided Procedures in Primary Care

8.1. Ultrasound-Guided FNA
- 8.1.1. Indications/Contraindications. Material
- 8.1.2. Informed Consent
- 8.1.3. Procedure
- 8.1.4. Results
- 8.1.5. Complications
- 8.1.6. Quality Control

8.2. Ultrasound-Guided Percutaneous Biopsy
- 8.2.1. Informed Consent
- 8.2.2. Biopsy Materials (Types of Biopsy Needles)
- 8.2.3. Procedure
- 8.2.4. Complications
- 8.2.5. Care
- 8.2.6. Quality Control

8.3. Drainage of Abscesses and Fluid Collections
- 8.3.1. Indications and Contraindications
- 8.3.2. Informed Consent
- 8.3.3. Requirements and Materials
- 8.3.4. Technique and Approach: Direct Puncture (Trocar Technique) vs. *Step to Step* (Seldinger)
- 8.3.5. Catheter Management and Patient Care
- 8.3.6. Side Effects and Complications
- 8.3.7. Quality Control

8.4. Ultrasound-Guided Thoracentesis, Pericardiocentesis, and Paracentesis
- 8.4.1. Indications and Advantages over the Anatomical Reference Technique
- 8.4.2. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
- 8.4.3. Ultrasound Specifications and Pericardial Drainage Technique

8.4.4. Ultrasound Specifications and Thoracic Drainage Technique
8.4.5. Ultrasound Specifications and Abdominal Drainage Technique
8.4.6. Common Problems, Complications, and Practical Advice
8.5. Ultrasound-Guided Vascular Cannulation
8.5.1. Indications and Advantages over the Anatomical Reference Technique
8.5.2. Current Evidence on Ultrasound-Guided Vascular Cannulation
8.5.3. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
8.5.4. Ultrasound-Guided Central Venous Cannulation Technique
8.5.5. Single Peripheral Catheter and Peripherally Inserted Central Catheter (PICC) Cannulation Technique
8.5.6. Arterial Cannulation Technique
8.6. Ultrasound-Guided Infiltration and Chronic Pain Treatment
8.6.1. Infiltrations and Pain
8.6.2. Large Joints: Intra-Articular and Myotendinous
8.6.3. Small Joints: Intra-articular and Myotendinous
8.6.4. Spinal Column

Module 9. Other Uses of Clinical Ultrasound

9.1. Radial Breast Ultrasound
9.1.1. Anatomy Recap
9.1.2. Technical Requirements
9.1.3. Ultrasound Slices
9.1.4. Ultrasound Characteristics. Breast Pathology
9.1.5. Breast Elastography
9.2. Dermatological Ultrasound
9.2.1. Echoanatomy of the Skin and Appendages
9.2.2. Ultrasound of Skin Tumors
9.2.3. Ultrasound of Inflammatory Skin Diseases
9.2.4. Ultrasound in Dermoesthetics and its Complications
9.3. Introduction to Cerebral Clinical Ultrasound
9.3.1. Brain Anatomy and of Ultrasound Interest
9.3.2. Ultrasound Techniques and Procedures
9.3.3. Structural Alterations
9.3.4. Functional Alterations
9.3.5. Intracranial Hypertension
9.4. Ultrasound in Diabetes
9.4.1. Aortic/Carotid Atheromatosis in Diabetics
9.4.2. Parenchymal Echogenicity in Diabetic Patients
9.4.3. Biliary Lithiasis in Diabetic Patients
9.4.4. Neurogenic Bladder in Diabetic Patients
9.4.5. Cardiomyopathy in Diabetic Patients
9.5. Ultrasound in the Study of Frailty in the Elderly
9.5.1. Frail Elderly
9.5.2. ABCDE Ultrasound in the Frail Elderly Patient
9.5.3. Ultrasound Examination of Sarcopenia
9.5.4. Ultrasound Examination of Cognitive Deterioration
9.6. Ultrasound Report
9.6.1. Ultrasound Note
9.6.2. Ultrasound Derivation
9.6.3. Ultrasound Report in PC

Module 10. Clinical Cardiac Ultrasound

10.1. Cardiac Anatomy
10.1.1. Basic Three-Dimensional Anatomy
10.1.2. Basic Cardiac Physiology
10.2. Technical Requirements to Perform a Cardiac Ultrasound
10.2.1. Probes
10.2.2. Characteristics of the Equipment used in a Cardiac Ultrasound
10.3. Pericardial Windows and Examination Techniques
10.3.1. Windows and Planes Applied in Emergencies and Intensive Care Situations
10.3.2. Basic Doppler (Color, Pulsating, Continuous and Tissue Doppler)

10.4. Structural Alterations
- 10.4.1. Basic Measures in Cardiac Ultrasound
- 10.4.2. Thrombi
- 10.4.3. Suspected Endocarditis
- 10.4.4. Valvulopathies
- 10.4.5. Pericardium
- 10.4.6. How is an ultrasound reported in emergency and intensive care?

10.5. Hemodynamic Ultrasound
- 10.5.1. Left Ventricular Hemodynamics
- 10.5.2. Right Ventricular Hemodynamics
- 10.5.3. Preload Dynamic Tests

10.6. Transesophageal Echocardiogram
- 10.6.1. Technique
- 10.6.2. Indications in Emergencies and Intensive Care Cases
- 10.6.3. Ultrasound-Guided Study of Cardioembolism

Module 11. Clinical Thoracic Ultrasound

11.1. Fundamentals of Thoracic Ultrasound and Anatomical Review
11.2. Technical Requirements. Examination Technique
11.3. Ultrasound of the Thoracic Wall and the Mediastinum
11.4. Ultrasound of the Pleura
11.5. Pulmonary Ultrasound Scan
11.6. Diaphragmatic Ultrasound

Module 12. Vascular Clinical Ultrasound in Emergencies and Critical Care

12.1. Anatomy Recap
- 12.1.1. Venous Vascular Anatomy of the Upper Limbs
- 12.1.2. Arterial Vascular Anatomy of the Upper Limbs
- 12.1.3. Venous Vascular Anatomy of the Lower Limbs
- 12.1.4. Arterial Vascular Anatomy of the Lower Limbs

12.2. Technical Requirements
- 12.2.1. Ultrasound Scanners and Probes
- 12.2.2. Curve Analysis
- 12.2.3. Image-Color Media
- 12.2.4. Echo Contrasts

12.3. Examination Technique
- 12.3.1. Positioning
- 12.3.2. Insonation. Examining Technique
- 12.3.3. Study of Normal Curves and Speeds

12.4. Large Thoracoabdominal Vessels
- 12.4.1. Venous Vascular Anatomy of the Abdomen
- 12.4.2. Arterial Vascular Anatomy of the Abdomen
- 12.4.3. Abdomino-Pelvic Venous Pathology
- 12.4.4. Abdomino-Pelvic Arterial Pathology

12.5. Supra-Aortic Trunks
- 12.5.1. Venous Vascular Anatomy of the Supra-Aortic Trunks
- 12.5.2. Arterial Vascular Anatomy of the Supra-Aortic Trunks
- 12.5.3. Venous Pathology of the Supra-Aortic Trunks
- 12.5.4. Arterial Pathology of the Supra-Aortic Trunks

12.6. Peripheral Arterial and Venous Circulation
- 12.6.1. Venous Pathology of Lower and Upper Limbs
- 12.6.2. Arterial Pathology of Lower and Upper Limbs

Module 13. Clinical Cerebral Ultrasound

13.1. Cerebral Hemodynamics
- 13.1.1. Carotid Circulation
- 13.1.2. Vertebro-Basilar Circulation
- 13.1.3. Cerebral Microcirculation

13.2. Ultrasound Modes
- 13.2.1. Transcranial Doppler
- 13.2.2. Cerebral Ultrasound
- 13.2.3. Special Tests (Vascular Reaction, HITS, etc.)

13.3. Acoustic Windows and Examination Technique
- 13.3.1. Acoustic Windows
- 13.3.2. Operator Position
- 13.3.3. Examination Sequence

13.4. Structural Alterations
- 13.4.1. Collections and Masses
- 13.4.2. Vascular Anomalies
- 13.4.3. Hydrocephalus
- 13.4.4. Venous Pathology

13.5. Hemodynamic Alterations
- 13.5.1. Spectral Analysis
- 13.5.2. Hyperdynamics
- 13.5.3. Hypodynamics
- 13.5.4. Asystole of the Brain

13.6. Ocular Ultrasonography
- 13.6.1. Pupil Size and Reactivity
- 13.6.2. Diameter of the Optic Nerve Sheath

Module 14. Clinical Abdominal Ultrasound

14.1. Anatomy Recap.
- 14.1.1. Abdominal Cavity
- 14.1.2. Liver
- 14.1.3. Gallbladder and Bile Ducts
- 14.1.4. Retroperitoneum and Great Vessels
- 14.1.5. Pancreas.
- 14.1.6. Bladder
- 14.1.7. Kidneys
- 14.1.8. Bladder
- 14.1.9. Prostate and Seminal Vesicles
- 14.1.10. Uterus and Ovaries

14.2. Technical Requirements
- 14.2.1. Ultrasound Equipment
- 14.2.2. Types of Transductors for Abdominal Examination
- 14.2.3. Basic Ultrasound Settings
- 14.2.4. Patient Preparation

14.3. Examination Technique
- 14.3.1. Examination Planes
- 14.3.2. Probe Movements
- 14.3.3. Visualization of Organs According to Conventional Sectioning
- 14.3.4. Systematic Examination

14.4. Echo-FAST Methodology
- 14.4.1. Equipment and Transducers
- 14.4.2. Echo-FAST I
- 14.4.3. Echo-FAST II
- 14.4.4. Echo-FAST III Perivesical Effusion
- 14.4.5. Echo-FAST IV Pericardial Effusion
- 14.4.6. Echo-FAST V. Exclude ABD Aortic Aneurysm

14.5. Ultrasound Scan of the Digestive System
- 14.5.1. Liver
- 14.5.2. Gallbladder and Bile Ducts
- 14.5.3. Pancreas.
- 14.5.4. Bladder

14.6. Genitourinary Ultrasound
- 14.6.1. Kidney
- 14.6.2. Urinary Bladder
- 14.6.3. Male Genital System
- 14.6.4. Female Genital System

Module 15. Ultrasonographic Approach to the Major Syndromes

15.1. Cardiac Arrest
- 15.1.1. Cerebral Hemodynamics
- 15.1.2. Brain Damage in Cardiac Arrest
- 15.1.3. Usefulness of Ultrasound in Resuscitation
- 15.1.4. Usefulness of Ultrasound After Recovery of Spontaneous Circulation

15.2. Shock
- 15.2.1. Ventricular Filling Pressure
- 15.2.2. Heart Failure
- 15.2.3. Prediction of the Hemodynamic Response to Intravascular Volume Administration
- 15.2.4. Ultrasound Assessment of Pulmonary Edema
- 15.2.5. Ultrasound Search for Sources of Sepsis

15.3. Respiratory Failure
- 15.3.1. Acute Respiratory Failure: Diagnosis
- 15.3.2. Abrupt Hypoxemia in Patients on Mechanical Ventilation
- 15.3.3. Monitoring of Recruitment Maneuvers
- 15.3.4. Assessment of Extravascular Lung Water

15.4. Acute Renal Failure
- 15.4.1. Hydronephrosis
- 15.4.2. Lithiasis
- 15.4.3. Acute Tubular Necrosis
- 15.4.4. Doppler Ultrasound in Acute Renal Failure
- 15.4.5. Bladder Ultrasound in Acute Renal Failure

15.5. Trauma
- 15.5.1. FAST and E-FAST (Hemo and Pneumothorax)
- 15.5.2. Ultrasound Assessment in Special Situations
- 15.5.3. Hemodynamic Assessment Focused on Trauma

15.6. Stroke
- 15.6.1. Justification
- 15.6.2. Initial Assessment
- 15.6.3. Ultrasound Appraisal
- 15.6.4. Ultrasound-Guided Management

Module 16. Echo-Guided Procedures in Emergencies and Critical Care

16.1. Airway
- 16.1.1. Advantages and Disadvantages
- 16.1.2. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
- 16.1.3. Orotracheal Intubation Technique
- 16.1.4. Percutaneous Tracheotomy Technique
- 16.1.5. Common Problems, Complications, and Practical Advice

16.2. Vascular Cannulation
- 16.2.1. Indications and Advantages of the Anatomical Reference Technique
- 16.2.2. Current Evidence on Ultrasound-Guided Vascular Cannulation
- 16.2.3. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
- 16.2.4. Ultrasound-Guided Central Venous Cannulation Technique
- 16.2.5. Single Peripheral Catheter and Peripherally Inserted Central Catheter (PICC) Cannulation Technique.
- 16.2.6. Arterial Cannulation Technique
- 16.2.7. Implementation of an Ultrasound-Guided Vascular Cannulation Protocol
- 16.2.8. Common Problems, Complications, and Practical Advice

16.3. Pericardiocentesis and Thoracentesis
- 16.3.1. Indications and Advantages of the Anatomical Reference Technique
- 16.3.2. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
- 16.3.3. Ultrasound Specifications and Pericardial Drainage Technique
- 16.3.4. Ultrasound Specifications and Thoracic Drainage Technique
- 16.3.5. Common Problems, Complications, and Practical Advice

16.4. Paracentesis
- 16.4.1. Indications and Advantages of the Anatomical Reference Technique
- 16.4.2. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
- 16.4.3. Ultrasound Specifications and Technique
- 16.4.4. Common Problems, Complications, and Practical Advice

16.5. Lumbar Puncture
- 16.5.1. Indications and Advantages of the Anatomical Reference Technique
- 16.5.2. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
- 16.5.3. Technique
- 16.5.4. Common Problems, Complications, and Practical Advice

16.6. Other Drainage and Probing
- 16.6.1. Suprapubic Probing
- 16.6.2. Collection Drainage
- 16.6.3. Extraction of Foreign Bodies

Module 17. Clinical Pediatric Ultrasound

17.1. Technical Requirements
- 17.1.1. Ultrasound at the Patient's Bedside
- 17.1.2. Physical Space
- 17.1.3. Basic Equipment
- 17.1.4. Equipment for Interventionalist Ultrasounds
- 17.1.5. Ultrasound Scanners and Probes

17.2. Examination Technique
- 17.2.1. Pediatric Patient Preparation
- 17.2.2. Tests and Probes
- 17.2.3. Ultrasound Section Planes
- 17.2.4. Examination System
- 17.2.5. Ultrasound-Guided Procedures
- 17.2.6. Images and Documentation
- 17.2.7. Test Report

17.3. Pediatric Sonoanatomy and Sonophysiology
- 17.3.1. Normal Anatomy
- 17.3.2. Sonoanatomy
- 17.3.3. Sonophysiology of a Child in the Different Stages of Development
- 17.3.4. Variants of Normality
- 17.3.5. Dynamic Ultrasound

17.4. Ultrasound of the Major Pediatric Syndromes
- 17.4.1. Emergency Thorax Ultrasound
- 17.4.2. Acute Abdomen
- 17.4.3. Acute Scrotum

17.5. Ultrasound-Guided Procedures in Pediatrics
- 17.5.1. Vascular Access
- 17.5.2. Extraction of Superficial Foreign Bodies
- 17.5.3. Pleural Effusion

17.6. Introduction to Neonatal Clinical Ultrasound
- 17.6.1. Emergency Transfontanellar Ultrasound
- 17.6.2. Most Common Examination Indications in Emergencies
- 17.6.3. Most Common Pathologies in Emergencies

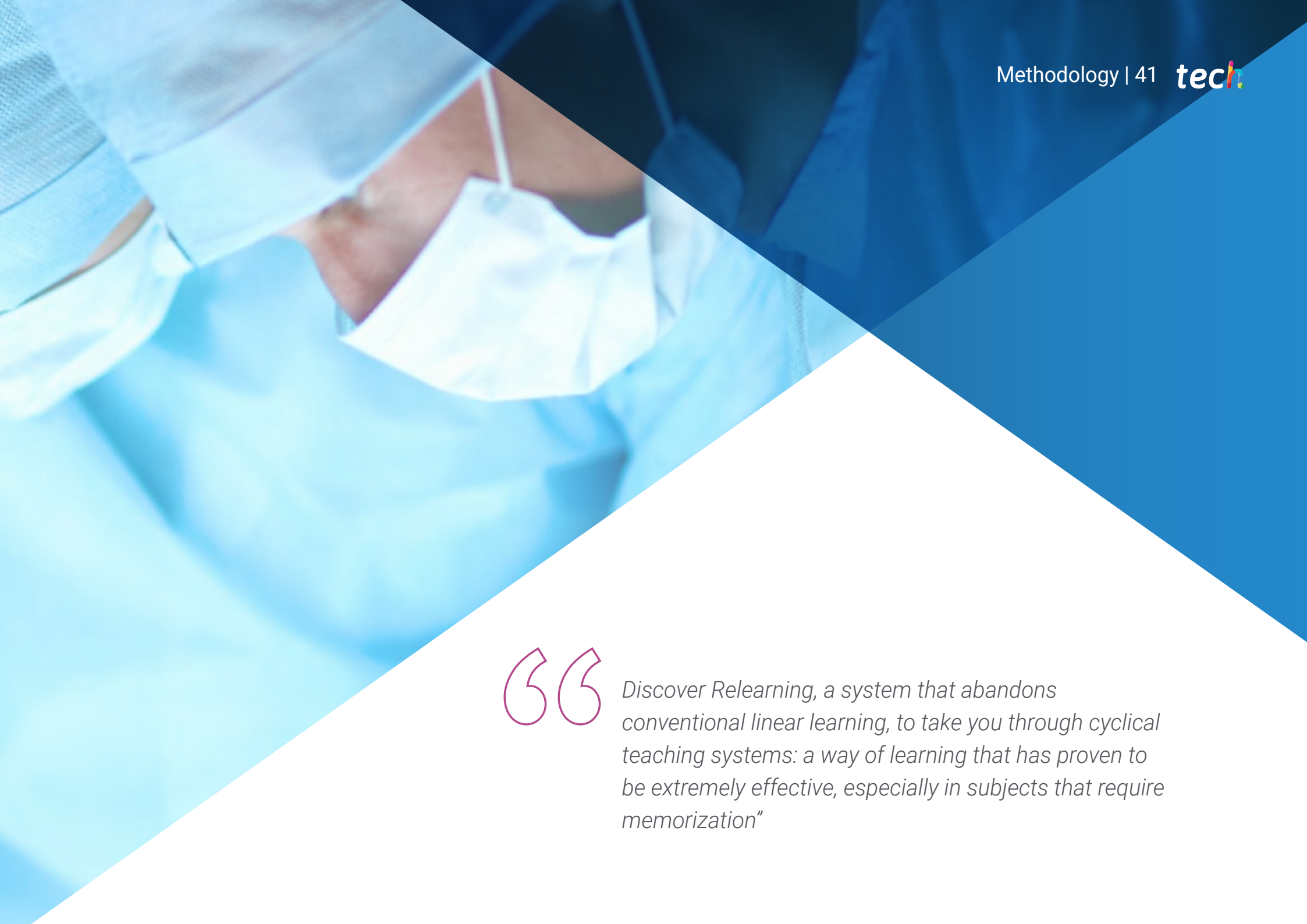
A complete specialization that will take you through the knowledge you need to compete among the best."

06

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: ***Relearning***.

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 Relearning, 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 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:

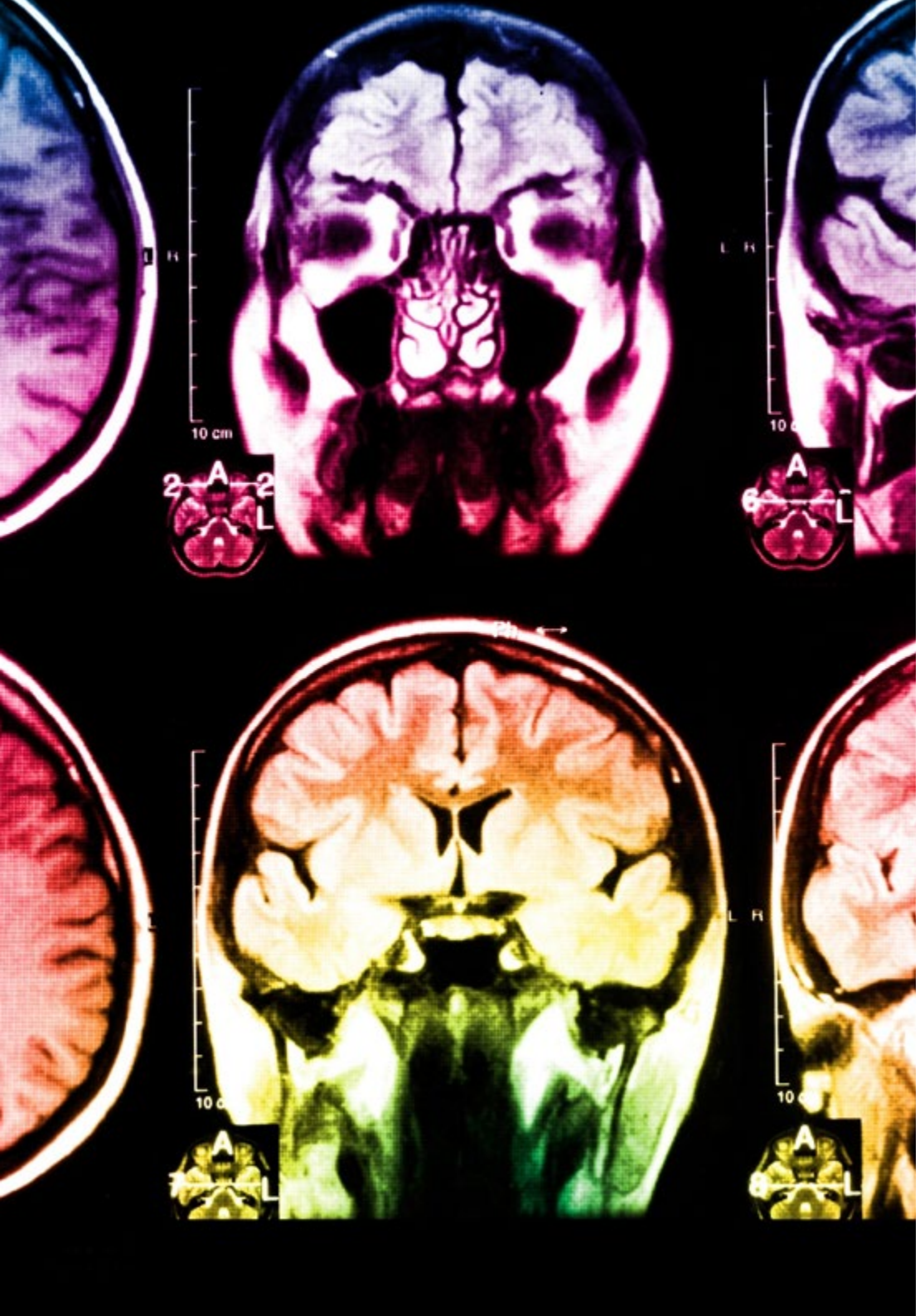
1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

Relearning Methodology

At TECH, we enhance the Harvard 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.



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 prepared with unprecedented success in all clinical specialties regardless of surgical load. Our educational 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.

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 adapted in 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.

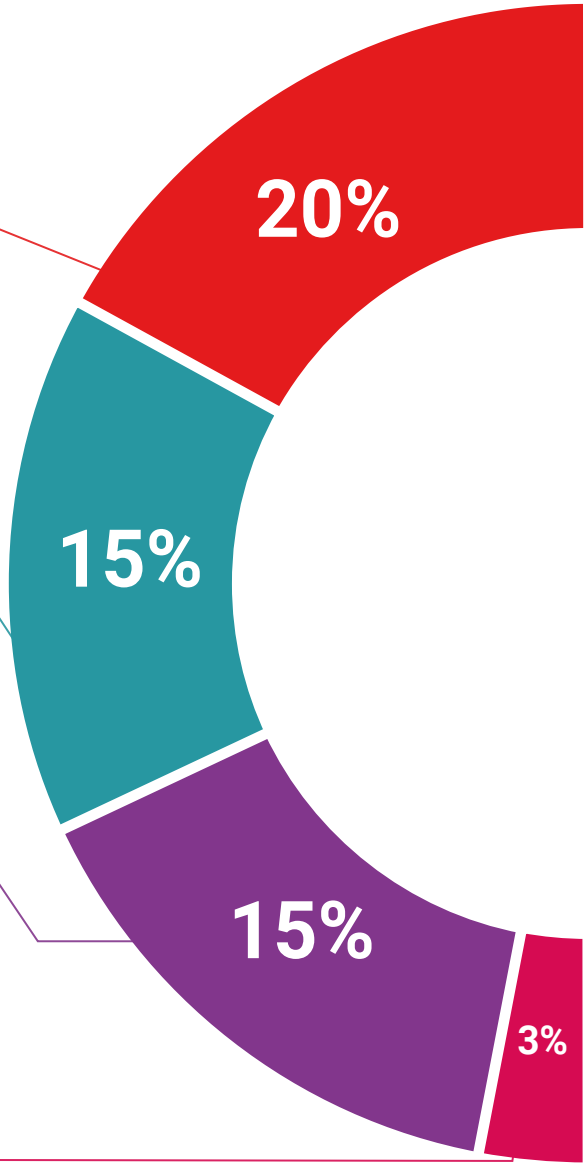
Interactive Summaries

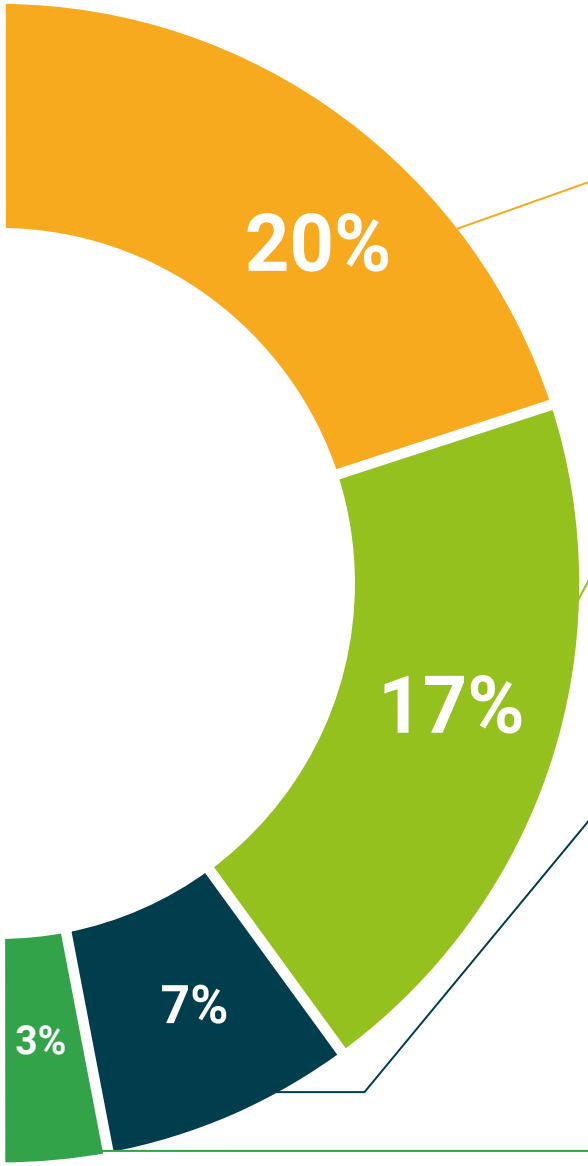
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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 assess and re-assess 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.

07

Certificate

This Advanced Master's Degree in Clinical Ultrasound guarantees students, in addition to the most rigorous and up-to-date education, access to an Advanced Master's Degree issued by TECH Global University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

This program will allow you to obtain your **Advanced Master's Degree diploma in Clinical Ultrasound** 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: **Advanced Master's Degree in Clinical Ultrasound**

Modality: **online**

Duration: **2 years**

Accreditation: **120 ECTS**


tech global university

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

Advanced Master's Degree in Clinical Ultrasound

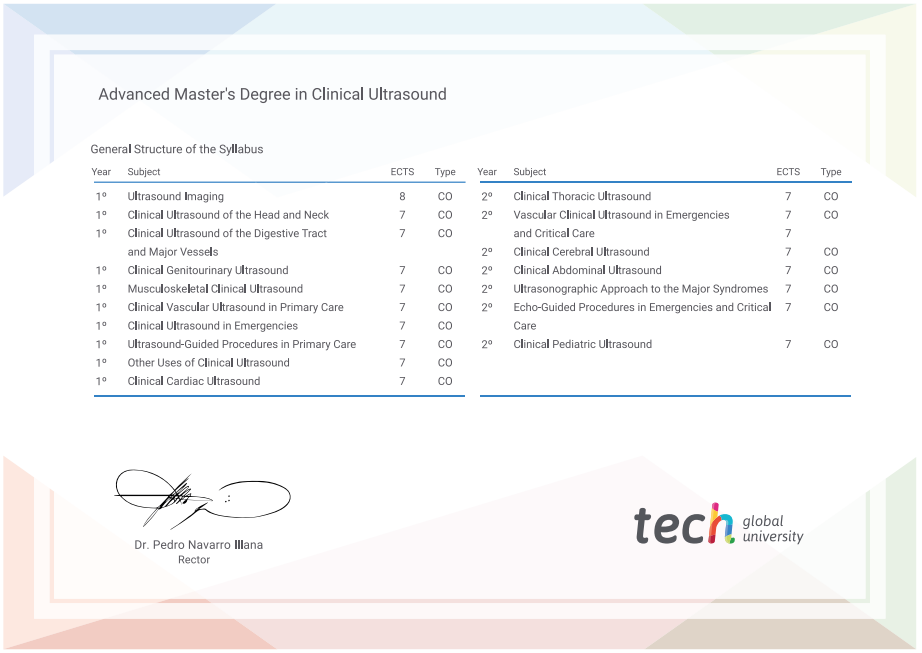
This is a program of 3,000 hours of duration equivalent to 120 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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


Advanced Master's Degree in Clinical Ultrasound

General Structure of the Syllabus

Year	Subject	ECTS	Type
1º	Ultrasound Imaging	8	CO
1º	Clinical Ultrasound of the Head and Neck	7	CO
1º	Clinical Ultrasound of the Digestive Tract and Major Vessels	7	CO
1º	Clinical Genitourinary Ultrasound	7	CO
1º	Musculoskeletal Clinical Ultrasound	7	CO
1º	Clinical Vascular Ultrasound in Primary Care	7	CO
1º	Clinical Ultrasound in Emergencies	7	CO
1º	Ultrasound-Guided Procedures in Primary Care	7	CO
1º	Other Uses of Clinical Ultrasound	7	CO
1º	Clinical Cardiac Ultrasound	7	CO
2º	Clinical Thoracic Ultrasound	7	CO
2º	Vascular Clinical Ultrasound in Emergencies and Critical Care	7	CO
2º	Clinical Cerebral Ultrasound	7	CO
2º	Clinical Abdominal Ultrasound	7	CO
2º	Ultrasonographic Approach to the Major Syndromes	7	CO
2º	Echo-Guided Procedures in Emergencies and Critical Care	7	CO
2º	Clinical Pediatric Ultrasound	7	CO

Dr. Pedro Navarro Illana
Rector

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*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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Advanced Master's Degree
Clinical Ultrasound

- Modality: **online**
- Duration: **2 years**
- Certificate: **TECH Global University**
- Credits: **120 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Advanced Master's Degree
Clinical Ultrasound

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