Hybrid Professional Master's Degree

Clinical Ultrasound in Emergencies and Intensive Care for Nursing

tech technological university

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Hybrid Professional Master's Degree

Clinical Ultrasound in Emergencies and Intensive Care for Nursing

Course Modality: **Hybrid (Online + Clinical Internship)**
Duration: **12 months**
Certificate: **TECH Technological University**
Teaching Hours: **1,620 h.**
Website: **www.techtitute.com/pk/nursing/hybrid-professional-masters-degree/hybrid-professional-masters-degree-clinical-ultrasound-emergencies-intensive-care-nursing**

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01

Introduction

Technological advances in Clinical Ultrasound and the implementation of new procedures in the field of Critical Care oblige nursing personnel to remain up to date. However, these professionals face challenges in accessing the most updated knowledge due to the fact that the educational market programs are poorly adapted to their needs in terms of skills development. That is why TECH has designed this program that uniquely integrates practical and theoretical learning in two distinct stages. In the first phase, they will delve into the study of modern concepts from a 100% online platform. At the same time, they will spend 3 weeks in a face-to-face and intensive stay in a reference hospital center.

This sharp refresher course is ideal for you to expand the boundaries of your career in the Nursing field. Enroll now with TECH!"

The last few decades have been pivotal for nursing professionals. Gradually, they have had to take on new challenges and procedures within the nursing practice. Particularly in the field of Critical Care and Emergency Care, updated work protocols have been implemented for these professionals. Additionally, ultrasound technologies have evolved and with them the management that the nurse must know to make an efficient use of them. However, it is difficult to keep up to date with all these innovations in a pedagogical context where qualifications do not cover the development of specific competencies and skills within this framework.

In this context, TECH has devised a learning modality that integrates the teaching of modern aspects of this area of Nursing in two distinct stages. In the first stage, the student will dedicate 1,500 hours to theoretical learning of concepts and work protocols of recent application. In particular, they will examine disinfection methodologies, care for major syndromes and the use of the most modern technologies. The approach to all these aspects, this educational moment is supported by methods of great didactic value, such as Relearning. Likewise, the student will not have to worry about pre-established schedules or evaluation chronograms.

In turn, in the second stage, this Hybrid Professional Master's Degree proposes a practical and face-to-face internship. During 3 weeks, the nurse will apply the most recent protocols in the assistance of physicians and real patients. They will also have the opportunity to use state-of-the-art technological resources for each of these interventions. During this period, the student will work under the supervision of an assistant tutor. This academic figure will be in charge of inserting dynamic tasks that will complement the skills acquired. At the same time, they will discuss methods and strategies of care with experts with extensive experience. Therefore, after 1,620 hours of theoretical and practical study, they will be able to incorporate the most effective and recent trends into their daily professional practice.

This **Hybrid Professional Master's Degree in Clinical Ultrasound in Emergencies and Intensive Care for Nursing** contains the most complete and updated scientific program on the market. It's most outstanding features are:

- Development of more than 100 clinical cases presented by nursing professionals with expertise in Clinical Ultrasound in Emergency and Critical Care
- 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
- Presentation of practical workshops on clinical ultrasound techniques.
- Algorithm-based interactive learning system for decision making in and intensive care subject
- Practical clinical guides on approaching different pathologies
- All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection
- Furthermore, you will be able to carry out a clinical internship in one of the best medical centers

During the theoretical phase of this program, the main advances in the care of critically ill pediatric patients that are relevant to the nursing professional will be discussed"

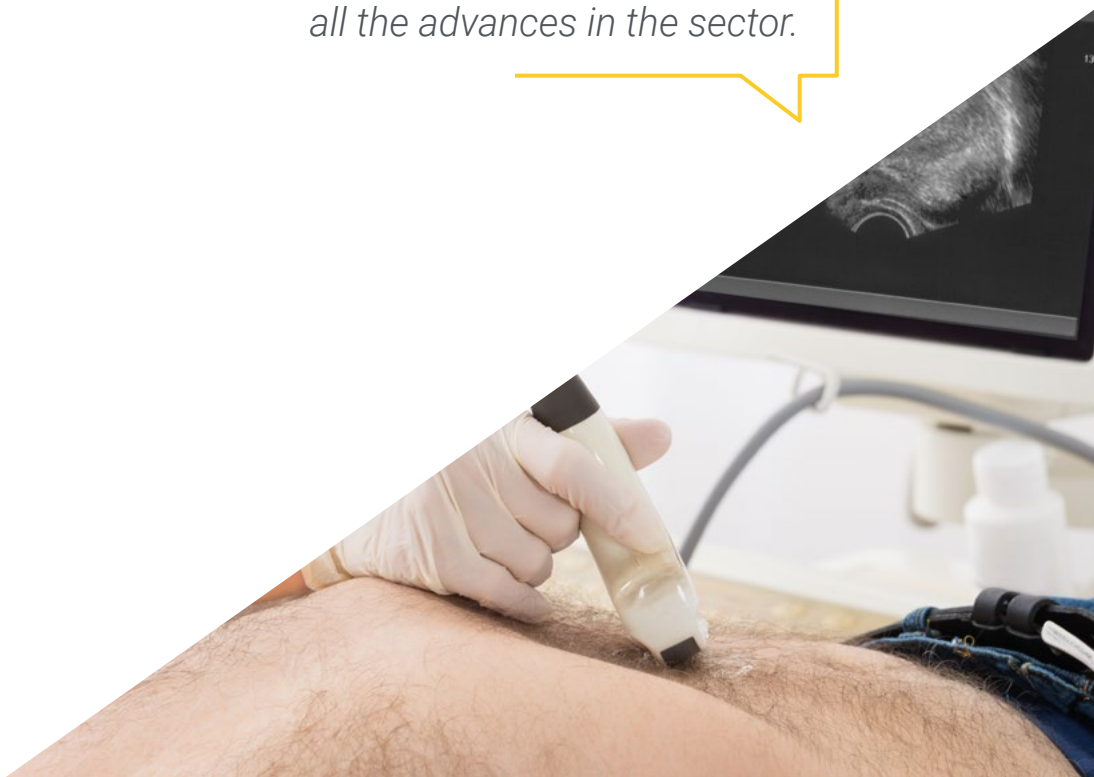
Attend a 3-week intensive internship in a prestigious center and acquire an advanced management of the best ultrasound technologies that are essential for the modern practice of nursing"

This Hybrid Professional Master's Degree allows you to practice in simulated environments, which provide immersive learning within a hospital facility of the highest prestige in the field of Nursing.

Update your skills and practical procedures in Clinical Ultrasound for Nursing through an innovative learning strategy where you will study in a theoretical and practical way all the advances in the sector.

In this proposed Professional Master's Degree, of professionalizing character and hybrid learning modality, the program is aimed at updating nursing professionals who require a high level of qualification. The content is based on the latest scientific evidence and is organized in a didactic way to integrate theoretical knowledge into nursing practice. The theoretical-practical elements allow professionals to update their knowledge and help them to make the right decisions in patient care.

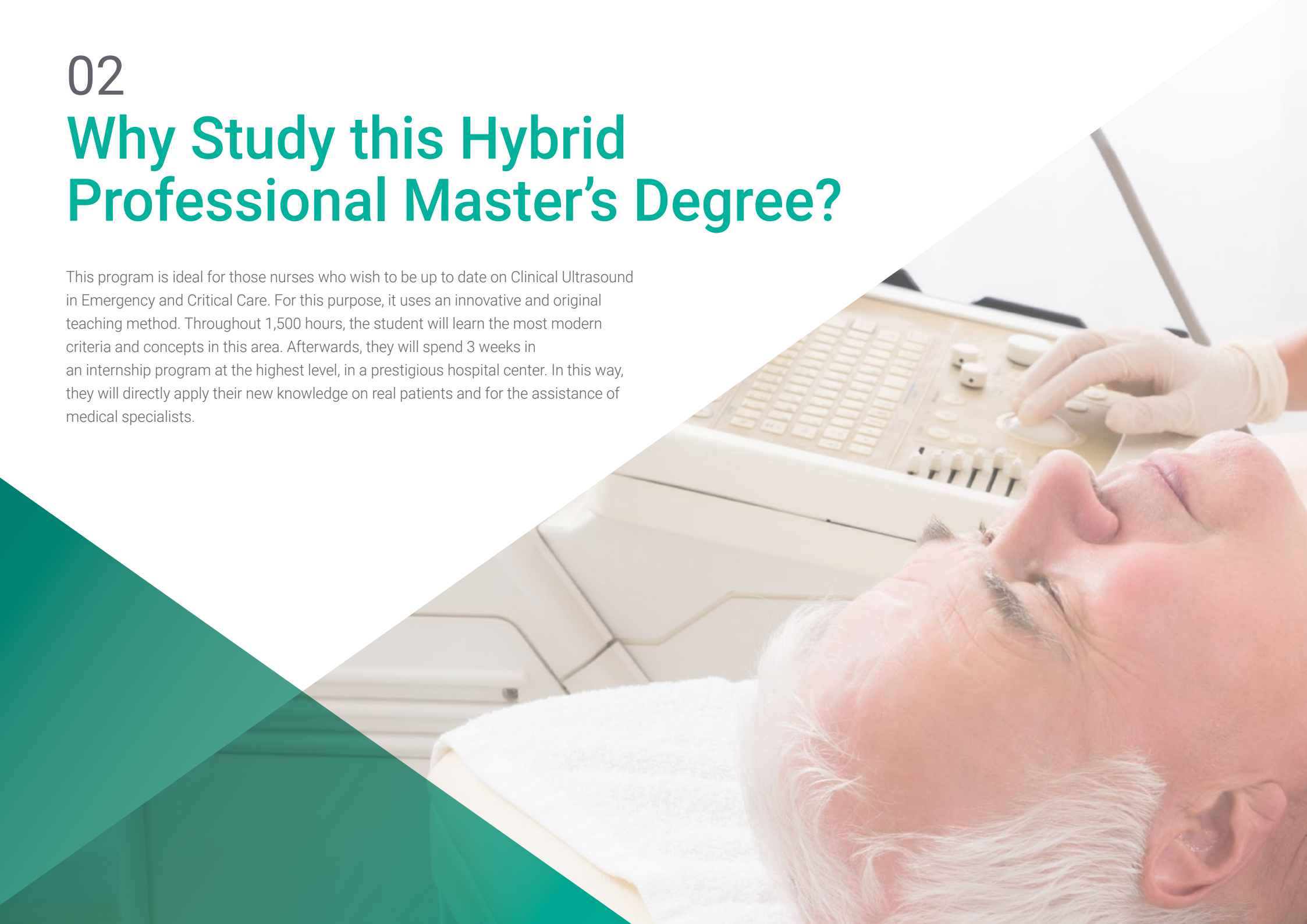
Thanks to its multimedia content elaborated with the latest educational technology, it will allow the nursing professional to obtain a situated and contextual learning, that is to say, a simulated environment that will provide an immersive learning programmed to train in real situations. This program 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.



02

Why Study this Hybrid Professional Master's Degree?

This program is ideal for those nurses who wish to be up to date on Clinical Ultrasound in Emergency and Critical Care. For this purpose, it uses an innovative and original teaching method. Throughout 1,500 hours, the student will learn the most modern criteria and concepts in this area. Afterwards, they will spend 3 weeks in an internship program at the highest level, in a prestigious hospital center. In this way, they will directly apply their new knowledge on real patients and for the assistance of medical specialists.



TECH is the only university that offers you the possibility to enter real clinical environments and get updated on the latest trends in Nursing in the company of internationally renowned experts"

1. Updating from the latest technology available

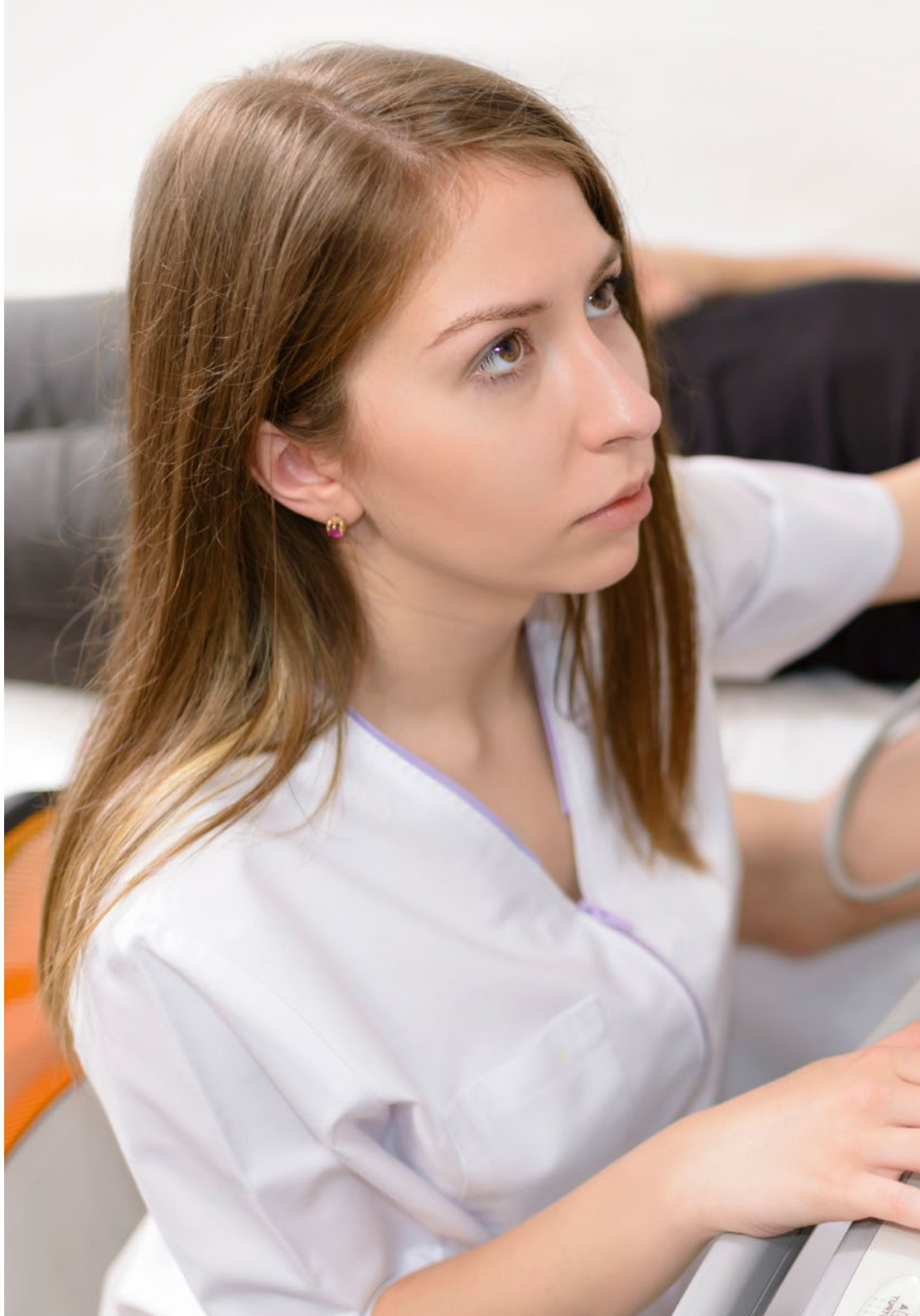
Nursing in the field of Emergency and Critical Care uses various equipment and assistance devices. These tools are constantly being updated, forcing the professional to remain up to date in their use. For this reason, TECH offers a program that combines in an exceptional way the practical and theoretical understanding of all these technologies, with emphasis on ultrasound.

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

The large team of professionals who will accompany the nurse throughout the practical period is a first-rate guarantee and an unprecedented guarantee of updating. With a specifically designated tutor, the student will be able to assist real doctors and patients in a state-of-the-art environment, which requires the highest qualification.

3. Entering First-Class Clinical Environments

TECH carefully selects all the centers available for the practical stage of this program. As a result, the specialist will have guaranteed access to a prestigious clinical environment where they will apply the latest trends in Emergency and Critical Care Nursing. In this way, they will delve into the most recent problems of this professional field with the advice of the best scientists.



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

The academic market is dominated by teaching programs with a high theoretical load and poorly adapted to the needs of students. Faced with this scenario, TECH launches a new learning model that combines a theoretical study of 1,500 hours with practice, through a 100% face-to-face and intensive 3-week stay.

5. Expanding the Boundaries of Knowledge

TECH promotes the realization of this clinical practice in international reference centers. Therefore, the graduate will be able to choose between prestigious facilities, located in different cities, to complete their update within the aforementioned field of Nursing. This is a unique opportunity that only TECH, as the largest digital university in the world, could offer.

You will have full practical immersion at the center of your choice"

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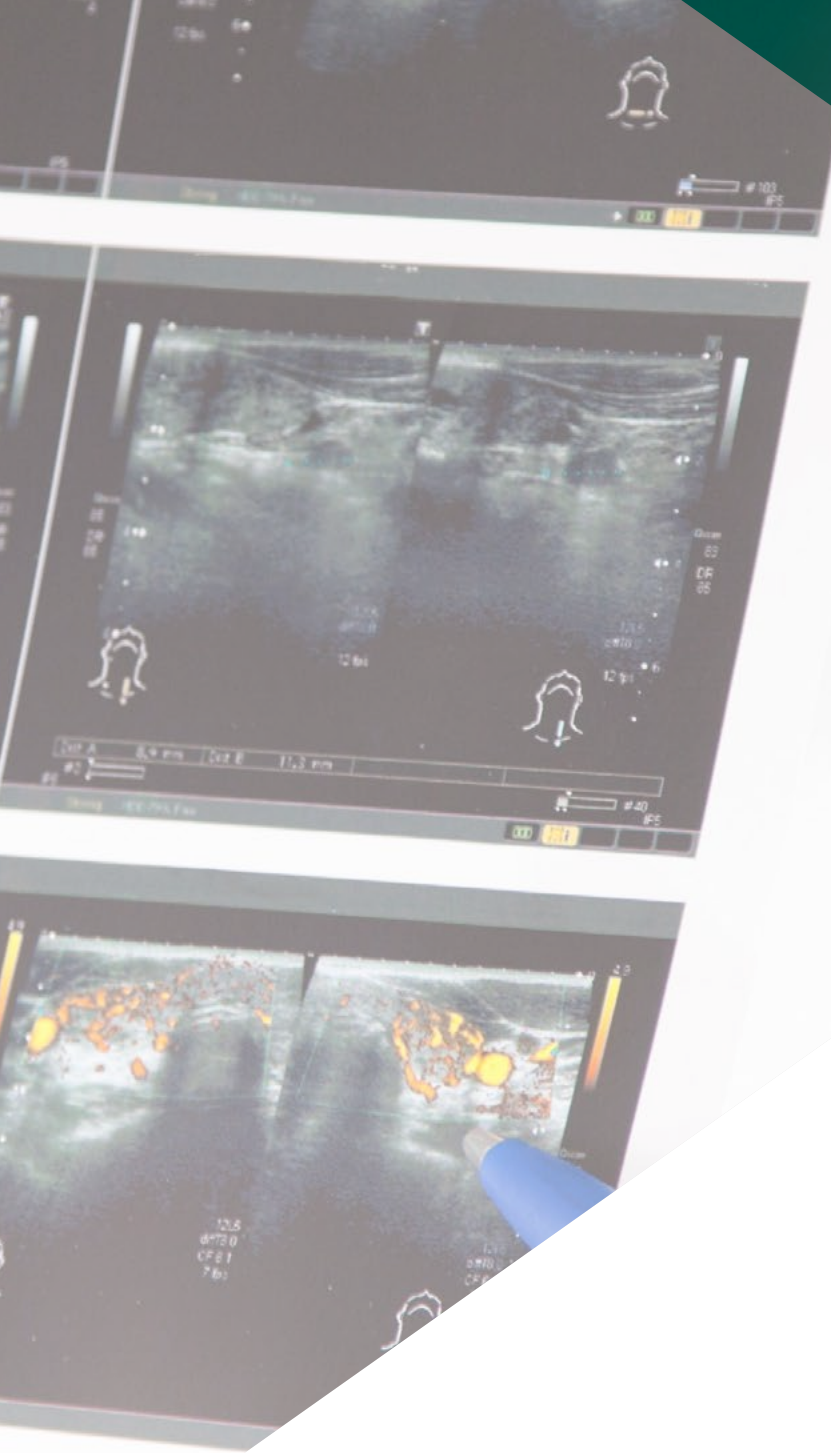
Objectives

The design of the program of this Hybrid Professional Master's Degree program will enable the student to acquire a complete update on Clinical Ultrasound in Emergency and Critical Care for Nursing. This program aims for each graduate to handle state-of-the-art tools and apply powerful work techniques. To this end, TECH implements several general and specific objectives that will contribute to the comprehensive training of the graduate. Additionally, this program is supported by a teaching modality that combines theoretical and practical learning in this area in an exceptional way.



This Hybrid Professional Master's Degree gives you the opportunity to offer the best care to the critical patient, after the theoretical and practical analysis of the most efficient techniques in the hands of the Nursing professional"

General Objective

- The general objective of this Hybrid Professional Master's Degree is to update knowledge about ultrasound imaging and its multiple possibilities. It also delves into the working protocols of nursing staff for the management of emergency situations and critical patients. Additionally, the graduate will be able to incorporate into their practice the most modern procedures for cannulation, vascularization and intubation that are ultrasound-guided and require the intervention of health care personnel

Thanks to this program, you will incorporate into your daily professional practice the latest trends in the disinfection of invasive ultrasound material"

Specific Objectives

Module 1. Ultrasound imaging

- Define the physical principles which are involved in ultrasound imaging
- Establish an appropriate ultrasound sequence for each examination of a patient
- Explain the different ultrasound modes
- Define the different types of sonographs and their applications
- Describe the different ultrasound planes
- Explain the principles of echonavigation

Module 2. Clinical Cardiac Ultrasound

- 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

Module 3. Clinical Thoracic 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

Module 4. Vascular Clinical Ultrasound in Emergencies and Primary Care

- 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

Module 5. Clinical Cerebral Ultrasound

- 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

Module 6. Clinical Abdominal 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

Module 7. Clinical Musculoskeletal Ultrasound

- Explain the anatomy of the musculoskeletal system
- Describe the technical requirements of musculoskeletal ultrasounds
- Explain the examination technique for musculoskeletal ultrasounds
- Define the sonoanatomy of the locomotor system
- Explain the principles of ultrasound of the most common acute locomotor system injuries

Module 8. Ultrasonographic Approach to the Major Syndromes.

- 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

Module 9. Echoguided Procedures in Emergencies and Critical Care

- 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

Module 10. Clinical Pediatric Ultrasound

- 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

04

Skills

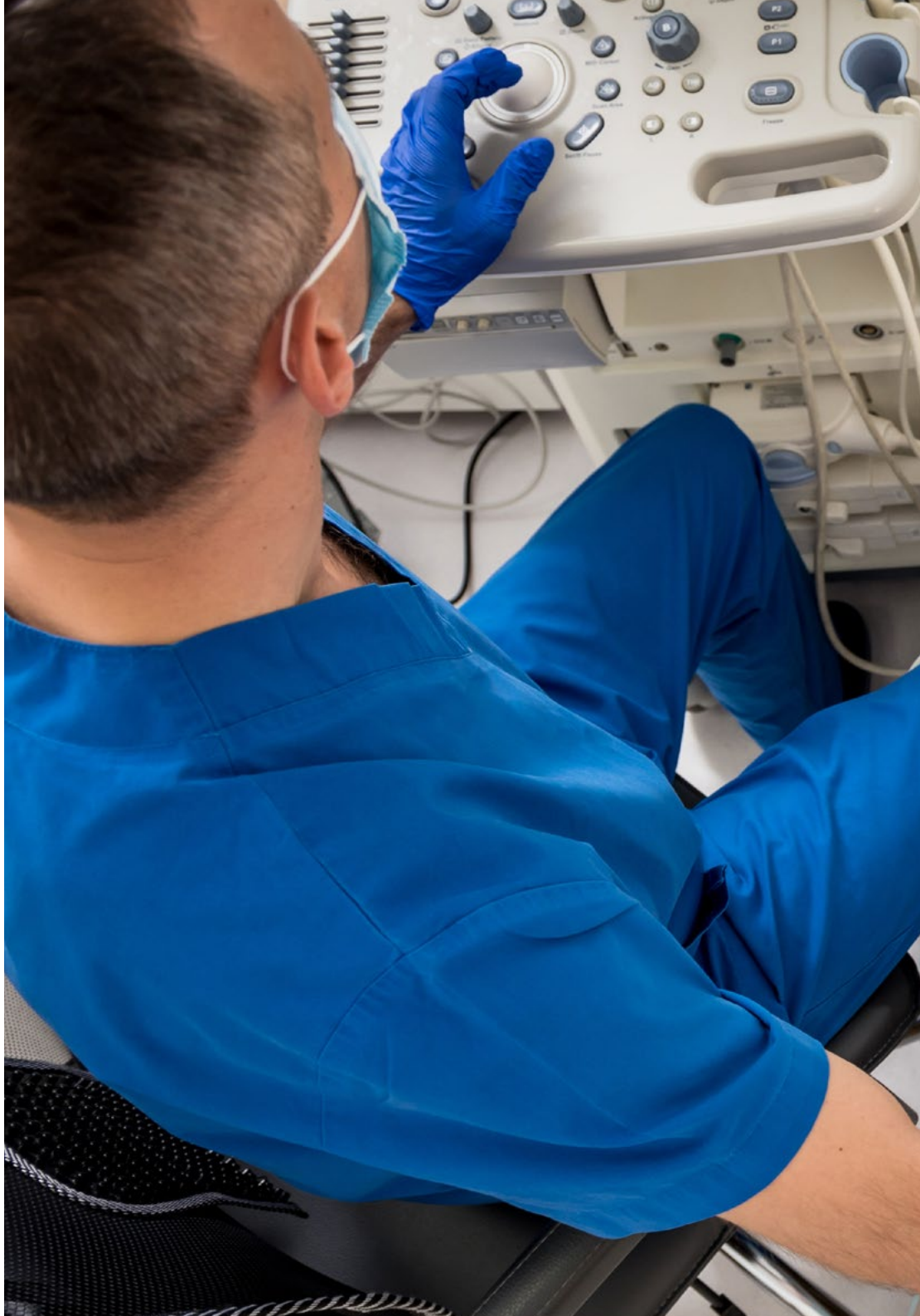
After passing the evaluations of the Hybrid Professional Master's Degree, the nursing professional will have acquired the professional competencies necessary for quality care in Critical Care and will be able to assist, with fluency, ultrasound procedures of rigor. Therefore, they will have the most updated training and based on the latest scientific evidence.

Through this program, you will be updated on protocols and work skills that the Critical Care unit requires from the nursing staff"

General Skills

- Knowledge that provides a basis or opportunity for originality in the development and/or application of ideas, often in a research context
- Apply acquired knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to the field of study
- Integrate knowledge and face the complexity of making judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments
- Communicate their conclusions, with the knowledge and rationale behind them, to specialized and non-specialized audiences in a clear and unambiguous manner
- Possess the learning skills that will enable them to continue studying in a manner that will be largely self-directed or autonomous

Don't wait any longer and enroll now! This Hybrid Professional Master's Degree can make you an elite nurse in the fastest and most flexible way"



Specific Skills

- Optimize ultrasound imaging through in-depth knowledge of the physical principles of ultrasound and ultrasound machine controls and operation
- 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

05

Course Management

TECH has assembled a faculty of international reference for this Hybrid Professional Master's Degree in Clinical Ultrasound in Emergency and Critical Care for Nursing. These teachers stand out for their practical and theoretical skills that are constantly applied in the health care field. At the same time, their trajectory is supported by an active participation in the research field. Through these experiences, they have developed an integrative syllabus that will enhance in their graduates a cutting-edge praxis.

The faculty of this program is up to date on advances in Clinical Ultrasound and will delve into their most complex experiences with the nurse through TECH's 100% online platform"

Management

Dr. Álvarez Fernández, Jesús Andrés

- Chief Physician at the Juaneda Miramar Hospital
- Specialist in Intensive Care Medicine and Burn Patient Management at the Getafe University Hospital
- Associate Researcher of the Neurochemistry and Neuroimaging Area at the University of La Laguna

Professors

Dr. Flores Herrero, Ángel

- Angiology, Vascular and Endovascular Surgery Service Coordinator at Hospital Quirón Salud Toledo
- FEA of Vascular Surgery at the Enova Medical Center
- Assistant Physician of Vascular Surgery at the Toledo Hospital Complex
- Member of the American Society of Surgeons
- Collaborating Professor at the Catholic University San Antonio de Murcia (UCAM)
- Examiner of the European Board of Vascular Surgery and Fellow of the American College of Surgeons
- Doctor of Medicine and Surgery
- Master's Degree in Hospital Management

Dr. Yus Teruel, Santiago

- Transplant Coordinator at La Paz University Hospital of Madrid
- Specialist in Intensive Care Medicine
- Assistant Physician of Intensive Care Medicine at La Paz-Carlos III University Hospital Complex
- Member of the Ecoclub of SOMIAMA
- Degree in Medicine and Surgery

Dr. Abril Palomares, Elena

- Specialist Physician of the Intensive Care Medicine and Major Burns Service at the University Hospital of Getafe
- Graduate in Medicine and Surgery
- Medical Specialist in Intensive Care Medicine and Major Burns

Dr. Fumadó Queral, Josep

- Family Physician at the Els Muntells Primary Care Center
- Head of the Emergency Ultrasound Group of the Spanish Society of General and Family Physicians (SEMG)
- Qualified in Clinical Ultrasound and Training of Trainers by the University of Montpelier
- 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 Islands Society of Ultrasound (SOCANECO) and teacher of its Annual Symposium
- Teacher of the Master's Degree of Clinical Ultrasound for Emergencies and Critical Care of the CEU Cardenal Herrera University

Dr. Jiménez Díaz, Fernando

- Expert in Sport Medicine and University Professor
- Founder and Director of Sportoledo
- Researcher at the Sports Performance and Injury Rehabilitation Laboratory of the University of Castilla La Mancha
- Member of the Medical Service at Club Baloncesto Fuenlabrada
- Doctor in Medicine and Surgery from the University of Cordoba
- President of the Spanish Society of Ultrasound
- Member of the Spanish Society of Sports Medicine, European Federation of Ultrasound Societies in Medicine and Biology

Dr. Igeño Cano, José Carlos

- Chief of Service of Intensive Care and Emergency Medicine, San Juan de Dios de Córdoba Hospital
- Responsible for the Patient Welfare Area in the HUCI Project, Humanizing Intensive Care
- Coordinator of the Planning and Organization and Management Working Group of the Spanish Society of Intensive Care Medicine, Critical Care and Coronary Units (SEMICYUC)
- Medical Director of the Resuscitation and Post-Surgical Care Unit of the IDC Salud Virgen de Guadalupe Hospital
- Associate Physician of ICU in the Health Service of Castilla, La Mancha
- Assistant Physician of the Medicine and Neurotrauma Unit of the Nuestra Señora de la Candelaria Hospital
- Chief of Critical Patient Transport Service in Juan Manuel SL Ambulances
- Master's Degree in Clinical Management, Medical and Care Management at the CEU Cardenal Herrera University
- Member of Pan-American and Iberian Federation of Critical Medicine and Intensive Care, Spanish Society of Intensive Care, Critical Care and Coronary Units

Dr. Martínez Crespo, Javier

- Specialist in Intensive Care Medicine
- Attending Physician of Radiodiagnostics, University Hospital of Getafe
- Collaborator of the Ecoclub of SOMIAMA
- Degree in Medicine and Surgery
- Associate Professor at the European University of Madrid

Dr. Núñez Reiz, Antonio

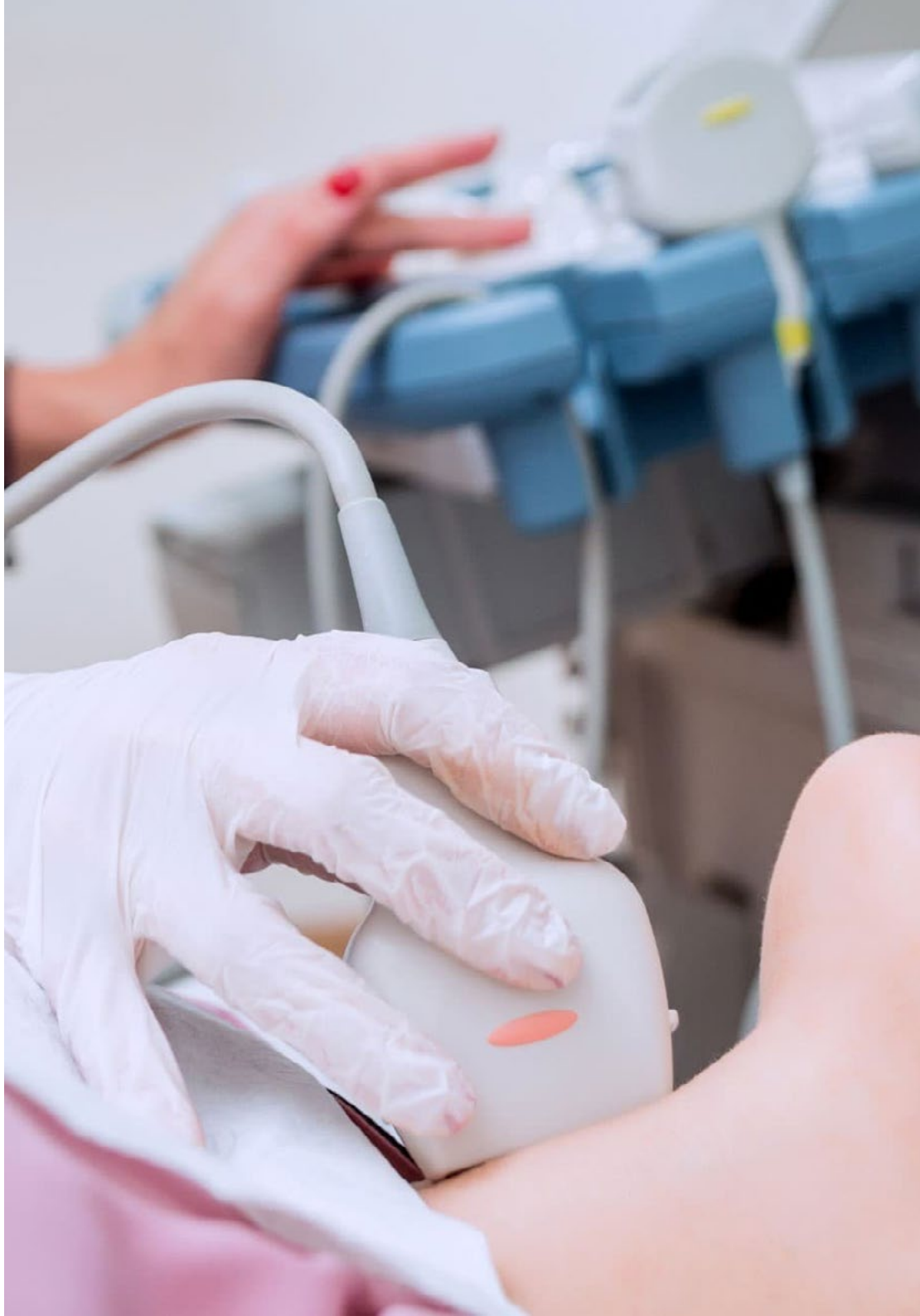
- Specialist Physician in Intensive Care Medicine at San Carlos Clinical University Hospital
- Doctor of the and Intensive Care Unit, Alcorcón Foundation University Hospital
- Specialist of the Unit for Intensive Care Medicine of the Príncipe Asturias University Hospital
- Member of the Cuban Society of Emergency and Intensive Care Medicine

Dr. Pérez Morales, Luis Miguel

- Coordinator of the Primary Care team in the Canary Health Service
- Family Physician, Primary Care Center of Arucas(Gran Canaria, Canary Islands)
- President and Professor of the Canary Society of Ultrasound (SOCANECO) and Director of its Annual Symposium
- Teacher of the Master's Degree of Clinical Ultrasound for Emergencies and Critical Care of the CEU Cardenal Herrera University
- Expert in Thoracic Ultrasound at the University of Barcelona
- Expert in Abdominal and Musculoskeletal Clinical Ultrasound for Emergency and Critical Care CEU Cardenal Herrera University
- Diploma of the Course of Ultrasound in Primary Care by the University Rovira y Virgili Institut Catalá de la Salut

Dr. Osiniri Kippes, María Inés

- Pediatrics, Pediatric Ultrasound and Pediatric Nephrology at Bofill Clinic, Girona
- Doctor of Medicine. Research in medical and clinical laboratory with Cum Laude excellence by the University of Girona
- Master's Degree in Health Promotion, University of Girona
- Degree in Pediatric Ultrasound by the Spanish Society of Ultrasound
- Pediatric Sonographer, Ecopedatria. Figueres
- Assistant Pediatrician. Head of Pediatric Ultrasound, Fundació Salut Empordá, Hospital de Figueres



Dr. Vollmer Torrubiano, Iván

- Medical Specialist in the Radiology Service of the Hospital Clinic of Barcelona
- Adjunct Coordinator of the Lung Cancer Functional Unit at Hospital del Mar
- European Diploma in Radiology
- Specialized training in Radiodiagnosis at the Hospital del Mar in Barcelona
- Graduate in Medicine and Surgery from the University of Barcelona
- Scientific responsible of the Spanish Society of Cardiothoracic Imaging (SEICAT)
- President of the Oncology Commission of the Spanish Society of Medical Radiology (SERAM)
- Member of the Scientific Committee of the National Congress of SERAM
- Member of the Scientific Committee of the National Congress of Radiologists of Catalonia

Dr. Álvarez González, Manuel

- Faculty Specialist at San Carlos Clinical Hospital
- Specialist in Intensive Care Medicine
- Founding Member of the Ecoclub of SOMIAMA
- Degree in Medicine and Surgery

Dr. Colinas Fernández, Laura

- Assistant Physician of Intensive Care Medicine at the University Hospital Complex of Toledo
- Graduate in Medicine and Surgery
- Member of the Spanish Society for Ultrasound in Critical Cases (ECOCRITIC)

Dr. López Cuenca, Sonia

- Specialist in Family Medicine and Intensive Care at the Rey Juan Carlos University Hospital
- Intensivist at the University Hospital of Getafe
- Researcher of the Madrid Health Service
- Intensivist at the Hospital Los Madroños
- Out-of-hospital emergency physician in SUMMA

Dr. Vicho Pereira, Raúl

- Clinical Chief of ICU at Hospital Quirónsalud Palmaplanas, Balearic Islands
- President of the Spanish Society for Ultrasound in Critical Cases (ECOCRITIC)
- Instructor of the National CPR syllabus
- Specialist in Intensive Care Medicine at the Hospital Quirónsalud Palmaplanas, Balearic Islands
- Specialist in Intensive Care Medicine at Virgen de Valme University Hospital, Sevilla.
- Intensive Care Unit Specialist at the Hospital Quirónsalud Palmaplanas, Balearic Islands
- Intensive Care Unit Specialist at the Clínica Rotger, Quirónsalud, Balearic Islands
- Responsible for the Resident Intern Medical Internship for Critical Care Ultrasound
- Expert Reviewer of the journal Medicina Intensiva
- More than 150 courses of Ultrasound in the last 5 years in all autonomous communities of the country for ICU, Anesthesia, Emergency
- Organizer of the First Congress of ECOCRITIC, Denia, Alicante, Spain
- Trainer of Ultrasound of the entire ICU service at the University Hospital of Donostia, Basque Country
- Trainer in Ultrasound of the ICU Service at the Hospital de Manises, Valencia, Spain
- Graduate in Medicine and Surgery from the University of Seville
  Doctor of Medicine and Surgery from the University of Extremadura
- Member of the Editorial Board of the journal e-Anestesiar, Spanish Society of Critical Care Ultrasound

Dr. De la Calle Reviriego, Braulio

- Chief of Intensive Care Medicine and Transplant Coordinator at the Gregorio Marañón Hospital
- Chief of Service at the Hospital Quirón San José
- Collaborating Professor at the Complutense University of Madrid
- Trainer in Brain Ultrasound of the National Transplant Organization
- Member of the Gregorio Marañón Health Research Institute

Dr. Hernández Tejedor, Alberto
- Specialist in Intensive Care Medicine
- Assistant Physician of Intensive Care Medicine at the Alcorcón Foundation University Hospital
- Intensivist at the University Hospital Quirón Madrid
- Author of dozens of scientific publications

Dr. Herrero Hernández, Raquel
- Specialist in Intensive Care Medicine
- Assistant Physician in the Intensive Care Medicine Medicine Unit at Getafe University Hospital
- Author of numerous scientific publications
- Doctor in Medicine from the Autonomous University Madrid

Dr. Lamarca Mendoza, María Pilar
- Assistant Physician of the Department of Angiology, Vascular and Endovascular Surgery of the Toledo Hospital Complex
- Associate Physician of ICU Service Health Service of Castilla- La Mancha)
- Author of numerous publications and scientific essays at national and international level
- Graduate in Medicine and Surgery from the Autonomous University of Madrid

Dr. López Rodríguez, Lucía
- Medical Specialist of the Intensive Care Medicine and Major Burns Service at the University Hospital of Getafe
- Doctor of Medicine from UCM
- Degree in Medicine and Surgery from the UCM
- Member of the Ecoclub of SOMIAMA

Dr. Martínez Díaz, Cristina
- Specialist in Intensive Care Medicine
- Graduate in Medicine and Surgery
- Doctor at Puerta De Asturias University Hospital. Alcalá Henares University
- Member of the Ecoclub of SOMIAMA

Dr. Mora Rangil, Patricia
- Specialist in Intensive Care Medicine, Miguel de Servet Hospital, Zaragoza, Spain
- Doctor at Miguel Servet Hospital, Zaragoza, Spain
- Graduate of the Faculty of Medicine, Rovira I Virgili University, Tarragona
- Degree in Medicine. MIR Intensive Care, Miguel Servet University Hospital
- Member of the Spanish Society of Critical Care Ultrasound, ECOCRITIC
- Author of the book Critical Patient: Medications, frequently used fluid therapy and hydroelectrolytic alterations

Dr. Ortuño Andériz, Francisco
- Neurocritical and Polytraumatized Section Physician at San Carlos Clinical Hospital
- Specialist in Intensive Care Medicine
- Doctor of Medicine and Surgery by the Complutense University of Madrid (UCM)
- Master's Degree in Organization, Management and Administration of Social and Health Care Services

Dr. Palacios Ortega, Francisco de Paula
- Specialist in Intensive Care Medicine
- Assistant Physician of the Intensive Care Unit at the University Hospital of Getafe
- Collaborating Physician of the Artificial Intelligence and Knowledge Engineering (AIKE) group, University of Murcia
- Research Collaborator of the WASPSS group, whose objective is the Rational Use of Antibiotics
- Speaker at the Lecture Series of the Center for Surgical Studies, Complutense University of Madrid

Dr. Temprano Vázquez, Susana

- Attending Physician, Intensive Care Medicine Service, HU 12 de Octubre
- Faculty of the ECMO Hybrid ECMO Course
- Founding member of the SOMIAMA EcoClub
- Graduate in Medicine and Surgery
- Specialist in Intensive Care Medicine

Dr. Phillipps Fuentes, Federico

- Pediatrician
- Pediatric On-Call Physician at the Emergency Department of the Acute Interzonal Hospital specialized in Pediatrics Sor María Ludovica, La Plata
- Area Specialist in the Pediatric Emergency Department at the Hospital Materno Insular University Hospital of the Canary Islands
- Chief of Pediatrics Resident Doctors at the General Children's Hospital Pedro de Elizalde, Buenos Aires
- Pediatrician of Outpatient Specialties at the Hospital Perpetuo Socorro, Las Palmas de Gran Canaria

Dr. Serna Gandía, María

- Medical Specialist in Anesthesiology and Resuscitation at the Hospital de Dénia Marina Salud, Alicante
- Secretary of the Spanish Society of Critical Care Ultrasound (ECOCRITIC)
- Speaker at courses and workshops for the use of Ultrasound in Intensive Care
- Graduate in Medicine and Surgery
- Specialty in Anesthesiology and Resuscitation
- Course for the management of Ultrasonography in ICU

Dr. Villa Vicente, Gerardo

- Physician of the Spanish Paralympic Committee
- Medical Specialist in Physical Education and Sports Medicine
- Professor of Physical Education and Sports at the University of León
- Director of fourteen doctoral theses, three dissertations and thirteen doctoral research papers (DEA)
- PhD in Medicine and Surgery from the University of Salamanca
- Specialist in Physical Education and Sports Medicine, University of Oviedo
- Expert in Ultrasound MSK (SEMED-FEMEDE)
- National Sports Medicine Award
- Member of the Institute of Biomedicine of León (IBIOMED), Spanish Paralympic Committee, Parliamentary Commission on the State of Sport (Healthy Lifestyle) of the Parliament of Castilla y León, Group of Experts in Physical Activity and Health for the Development of the A+D Plan of the Superior Sports Council (CSD)

The teachers of this program have composed a demanding and rigorous academic syllabus that will turn you into an up-to-date professional with the best health care results"

06

Educational Plan

The syllabus of this Hybrid Professional Master's Degree is composed of a total of 10 didactic modules. Through them, the nurse will learn the most updated criteria on ultrasound-guided intervention procedures for the insertion of drains, probes and punctures. At the same time, it examines the ultrasound approaches to major syndromes such as shock, sepsis, stroke, trauma, among others. Additionally, this syllabus is distinguished from others by its emphasis on pediatric critical care nursing techniques. At the same time, all these contents will be available on a 100% online and interactive platform, without predefined schedules or evaluation chronograms.

Get up to date in a direct way, on TECH's 100% online learning platform, through theoretical materials and multimedia resources such as videos and infographics"

Module 1. Ultrasound imaging

1.1. Physical principles |
- 1.1.1. Sounds and Ultrasound
- 1.1.2. Nature of ultrasound
- 1.1.3. Interaction of ultrasound with matter
- 1.1.4. 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. Echo reception
- 1.2.5. Ultrasound image generation

1.3. Ultrasound Modes
- 1.3.1. Mode A
- 1.3.2. M-Mode
- 1.3.3. Mode B
- 1.3.4. Color Doppler
- 1.3.5. Angio-Doppler
- 1.3.6. Spectral Doppler
- 1.3.7. Combined Modes
- 1.3.8. Other modalities and techniques

1.4. Ecography
- 1.4.1. Console Ecograph Ultrasound Scanners
- 1.4.2. Portable Ecograph Ultrasound scanners
- 1.4.3. Specialised Ecograph Ultrasound Scanners
- 1.4.4. Transducers

1.5. Ultrasound maps and Eco Navigation
- 1.5.1. Sagittal plane
- 1.5.2. Transverse plane
- 1.5.3. Coronal plane
- 1.5.4. Oblique planes
- 1.5.5. Ultrasound Marking
- 1.5.6. Transducer Movements

Module 2. Clinical Cardiac Ultrasound

2.1. Cardiac Anatomy
- 2.1.1. Basic Three-Dimensional Anatomy
- 2.1.2. Basic Cardiac Physiology

2.2. Technical Requirements
- 2.2.1. Probes
- 2.2.2. Characteristics of the Equipment used in a Cardiac Ultrasound

2.3. Pericardial Windows and Cardiac Ultrasound
- 2.3.1. Windows and Planes Applied in Emergencies and Intensive Care Situations
- 2.3.2. Basic Doppler (Color, Pulsating, Continuous and Tissue Doppler)

2.4. Structural Alterations
- 2.4.1. Basic Measures in Cardiac Ultrasound
- 2.4.2. Thrombi
- 2.4.3. Suspected Endocarditis
- 2.4.4. Valvulopathies
- 2.4.5. Pericardium
- 2.4.6. How is an ultrasound reported in emergency and intensive care?

2.5. Structural Alterations I
- 2.5.1. Left Ventricle
- 2.5.2. Right Ventricle

2.6. Hemodynamic Ultrasound
- 2.6.1. Left Ventricular Hemodynamics
- 2.6.2. Right Ventricular Hemodynamics
- 2.6.3. Preload Dynamic Tests

2.7. Transesophageal Echocardiogram
- 2.7.1. Technique
- 2.7.2. Indications in Emergencies and Intensive Care Cases
- 2.7.3. Ultrasound-Guided Study of Cardioembolism

Module 3. Clinical Thoracic Ultrasound

3.1. Fundamentals of Thoracic Ultrasound and Anatomical Review
- 3.1.1. Study of the Normal Thorax
- 3.1.2. Pulmonary Ultrasound Semiology
- 3.1.3. Pleural Ultrasound Semiology

3.2. Technical Requirements. Examination Technique
- 3.2.1. Types of Probes Used
- 3.2.2. Ultrasound with Contrast in the Thorax

3.3. Ultrasound of the Thoracic Wall and the Mediastinum
- 3.3.1. Examination of Pulmonary Pathology
- 3.3.2. Examination of Pleural Pathology
- 3.3.3. Examination of Mediastinal and Thoracic Wall Pathology

3.4. Ultrasound of the Pleura
- 3.4.1. Pleural Effusion and Solid Pleural Pathology
- 3.4.2. Pneumothorax
- 3.4.3. Pleural Interventionism
- 3.4.4. Adenopathies and Mediastinal Masses
- 3.4.5. Adenopathies of the Thoracic Wall
- 3.4.6. Osteomuscular Pathology of the Thoracic Wall

3.5. Pulmonary Ultrasound Scan
- 3.5.1. Pneumonia and Atelectasis
- 3.5.2. Pulmonary Neoplasms
- 3.5.3. Diffuse Pulmonary Pathology
- 3.5.4. Pulmonary Infarction

3.6. Diaphragmatic Ultrasound
- 3.6.1. Ultrasound Approach to the Diaphragmatic Pathology
- 3.6.2. Usefulness of Ultrasound in the Study of the Diaphragm

Module 4. . Vascular Clinical Ultrasound in Emergencies and Primary Care

4.1. Anatomy Recap.
- 4.1.1. Venous Vascular Anatomy of the Upper Limbs
- 4.1.2. Arterial Vascular Anatomy of the Upper Limbs
- 4.1.3. Venous Vascular Anatomy of the Lower Limbs
- 4.1.4. Arterial Vascular Anatomy of the Lower Limbs

4.2. Technical Requirements
- 4.2.1. Ultrasound Scanners and Probes
- 4.2.2. Curve Analysis
- 4.2.3. Image-Color Media
- 4.2.4. Echo Contrasts

4.3. Examination Technique
- 4.3.1. Positioning
- 4.3.2. Insonation. Examining Technique
- 4.3.3. Study of Normal Curves and Speeds

4.4. Large Thoracoabdominal Vessels
- 4.4.1. Venous Vascular Anatomy of the Abdomen
- 4.4.2. Arterial Vascular Anatomy of the Abdomen
- 4.4.3. Abdomino-Pelvic Venous Pathology
- 4.4.4. Abdomino-Pelvic Arterial Pathology

4.5. Supra-Aortic Trunks
- 4.5.1. Venous Vascular Anatomy of the Supra-Aortic Trunks
- 4.5.2. Arterial Vascular Anatomy of the Supra-Aortic Trunks
- 4.5.3. Venous Pathology of the Supra-Aortic Trunks
- 4.5.4. Arterial Pathology of the Supra-Aortic Trunks

4.6. Peripheral Arterial and Venous Circulation
- 4.6.1. Venous Pathology of Lower and Upper Limbs
- 4.6.2. Arterial Pathology of Lower and Upper Limbs

Module 5. Clinical Cerebral Ultrasound

5.1. Cerebral Hemodynamics
- 5.1.1. Carotid Circulation
- 5.1.2. Vertebro-Basilar Circulation
- 5.1.3. Cerebral Microcirculation

5.2. Ultrasound Modes
- 5.2.1. Transcraneal Doppler
- 5.2.2. Cerebral Ultrasound
- 5.2.3. Special Tests (Vascular Reaction, HITS, etc.)

5.3. Acoustic Windows and Examination Technique
- 5.3.1. Acoustic Windows
- 5.3.2. Operator Position
- 5.3.3. Examination Sequence

5.4. Structural Alterations
- 5.4.1. Collections and Masses
- 5.4.2. Vascular Anomalies.
- 5.4.3. Hydrocephalus
- 5.4.4. Venous Pathology

5.5. Hemodynamic Alterations
- 5.5.1. Spectral Analysis
- 5.5.2. Hyperdynamics
- 5.5.3. Hypodynamics
- 5.5.4. Asystole of the Brain

5.6. Ocular Ultrasonography
- 5.6.1. Pupil Size and Reactivity
- 5.6.2. Diameter of the Optic Nerve Sheath

5.7. Echo-Doppler in the Diagnosis of Brain Death
- 5.7.1. Clinical Diagnosis of Encephalic Death
- 5.7.2. Necessary Conditions Before Transcranial Doppler Examination (TCD) for the Diagnosis of Cerebral Circulatory Arrest
- 5.7.3. TCD Application Techniques
- 5.7.4. Advantages of a TCD
- 5.7.5. Limitations of TCD and Interpretation
- 5.7.6. TCD Ultrasound for the Diagnosis of Encephalic Death
- 5.7.7. TCD Ultrasonography in the Diagnosis of Brain Death.

Module 6. Clinical Abdominal Ultrasound

6.1. Anatomy Recap.
- 6.1.1. Abdominal Cavity
- 6.1.2. Liver
- 6.1.3. Gallbladder and Bile Ducts
- 6.1.4. Retroperitoneum and Great Vessels
- 6.1.5. Pancreas
- 6.1.6. Bladder
- 6.1.7. Kidneys
- 6.1.8. Bladder
- 6.1.9. Prostate and Seminal Vesicles
- 6.1.10. Uterus and Ovaries

6.2. Technical Requirements
- 6.2.1. Ultrasound Equipment
- 6.2.2. Types of Transductors for Abdominal Examination
- 6.2.3. Basic Ultrasound Settings
- 6.2.4. Patient Preparation

6.3. Examination Technique
- 6.3.1. Examination Planes
- 6.3.2. Probe Movements
- 6.3.3. Visualization of Organs According to Conventional Sectioning
- 6.3.4. Systematic Examination

6.4. ECO-FAST Methodology
- 6.4.1. Equipment and Transducers
- 6.4.2. FAST I
- 6.4.3. FAST II
- 6.4.4. FAST III. Perivesical Effusion
- 6.4.5. FAST IV. Pericardial Effusion
- 6.4.6. ECO-FAST V. Exclude ABD Aortic Aneurysm

6.5. Ultrasound Scan of the Digestive System
- 6.5.1. Liver
- 6.5.2. Gallbladder and Bile Ducts
- 6.5.3. Pancreas
- 6.5.4. Bladder

6.6. Genitourinary Ultrasound
- 6.6.1. Kidney
- 6.6.2. Urinary Bladder
- 6.6.3. Male Genital System
- 6.6.4. Female Genital System

6.7. Usefulness of Ultrasound in the Renal, Hepatic and Pancreatic Transplant Patient.
- 6.7.1. Normal Ultrasound in the Renal Transplant Patient.
- 6.7.2. Acute Tubular Necrosis (ATN)
- 6.7.3. Acute Rejection (AR)
- 6.7.4. Chronic Transplant Dysfunction
- 6.7.5. Normal Ultrasound in the Patient with Liver Transplant
- 6.7.6. Normal Ultrasound in the Patient with Pancreas Transplantation

Module 7. Clinical Musculoskeletal Ultrasound

7.1. Anatomy Recap.
- 7.1.1. Anatomy of the Shoulder
- 7.1.2. Anatomy of the Elbow
- 7.1.3. Anatomy of the Wrist and Hand
- 7.1.4. Anatomy of the Hip and Thigh
- 7.1.5. Anatomy of the Knee
- 7.1.6. Anatomy of the Ankle, Foot, and Leg

7.2. Technical Requirements
- 7.2.1. Musculoskeletal Ultrasound Equipment
- 7.2.2. Methodology of Implementation
- 7.2.3. Ultrasound imaging
- 7.2.4. Validation, Reliability, and Standardization
- 7.2.5. Ultrasound-Guided Procedures

7.3. Examination Technique
- 7.3.1. Basic Concepts in Ultrasound
- 7.3.2. Rules for Correct Examinations
- 7.3.3. Examination Technique in Ultrasound Study of the Shoulder
- 7.3.4. Examination Technique in Ultrasound Study of the Elbow
- 7.3.5. Examination Technique in Ultrasound Study of the Wrist and Hand
- 7.3.6. Examination Technique in Ultrasound Study of the Hip
- 7.3.7. Examination Technique in Ultrasound Study of the Thigh
- 7.3.8. Examination Technique in Ultrasound Study of the Knee
- 7.3.9. Examination Technique in Ultrasound Study of the Leg and Ankle

7.4. Sonoanatomy of the Locomotor System: I. Upper Extremities
- 7.4.1. Shoulder Ultrasound Anatomy
- 7.4.2. Elbow Ultrasound Anatomy
- 7.4.3. Wrist and Hand Anatomy Ultrasound

7.5. Sonoanatomy of the Locomotor System: II. Lower Extremities
- 7.5.1. Hip Ultrasound Anatomy
- 7.5.2. Thigh Ultrasound Anatomy
- 7.5.3. Knee Ultrasound Anatomy
- 7.5.4. Leg and Ankle Ultrasound Anatomy

7.6. Ultrasound in the Most Frequent Acute Locomotor System Injuries
- 7.6.1. Muscle Injuries
- 7.6.2. Tendon Injuries
- 7.6.3. Ligament Injuries
- 7.6.4. Subcutaneous Tissue Injuries
- 7.6.5. Bone Injuries
- 7.6.6. Joint Injuries
- 7.6.7. Peripheral Nerve Injuries

Module 8. Ultrasonographic Approach to the Major Syndromes.

8.1. Ultrasound in Acute Renal Failure
- 8.1.1. Introduction
  - 8.1.1.1. Pre-Renal ARF
  - 8.1.1.2. Renal or Intrinsic ARF
  - 8.1.1.3. Post-Renal or Obstructive ARF
- 8.1.2. Hydronephrosis
- 8.1.3. Lithiasis
- 8.1.4. Acute Tubular Necrosis
- 8.1.5. Doppler Ultrasound in Acute Renal Failure
- 8.1.6. Bladder Ultrasound in Acute Renal Failure

8.2. Ultrasound in Trauma
- 8.2.1. FAST and E-FAST (Hemo and Pneumothorax)
- 8.2.2. Ultrasound Assessment in Special Situations
- 8.2.3. Hemodynamic Assessment Focused on Trauma

8.3. Ultrasound in Strokes
- 8.3.1. Introduction
- 8.3.2. Justification
- 8.3.3. Initial Assessment
- 8.3.4. Ultrasound Appraisal
- 8.3.5. Ultrasound-Guided Management

8.4. Ultrasound in Cardiac Arrest
- 8.4.1. Cerebral Hemodynamics
- 8.4.2. Hemodynamics in Cardiac Arrest
- 8.4.3. Usefulness of Ultrasound in Resuscitation
- 8.4.4. Usefulness of Ultrasound After Recovery of Spontaneous Circulation

8.5. Ultrasound in Shock
- 8.5.1. Definition, Types of Shock and Echocardiographic Findings
  - 8.5.1.1. Definition
  - 8.5.1.2. Types of Shock
  - 8.5.1.3. Advantages of Ultrasound in the Recognition and Management of the Different Etiologies of Shock
  - 8.5.1.4. Considerations in ICU
  - 8.5.1.5. Hemodynamic Monitoring by Ultrasound

8.6. Ultrasound in Respiratory Failure
- 8.6.1. Clinical Ethology of Dyspnea
- 8.6.2. Approach to the Patient with Dyspnea
- 8.6.3. Usefulness of Clinical Ultrasound in the Patient with Dyspnea
- 8.6.4. Pulmonary Ultrasound Scan
- 8.6.5. Echocardiography

Module 9. Echoguided Procedures in Emergencies and Critical Care

9.1. Airway
- 9.1.1. Advantages and Disadvantages
- 9.1.2. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
- 9.1.3. Orotracheal Intubation Technique
- 9.1.4. Percutaneous Tracheotomy Technique
- 9.1.5. Common Problems, Complications, and Practical Advice

9.2. Vascular Cannulation
- 9.2.1. Indications and Advantages of the Anatomical Reference Technique
- 9.2.2. Current Evidence on Ultrasound-Guided Vascular Cannulation
- 9.2.3. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
- 9.2.4. Ultrasound-Guided Central Venous Cannulation Technique
- 9.2.5. Single Peripheral Catheter and Peripherally Inserted Central Catheter (PICC) Cannulation Technique.
- 9.2.6. Arterial Cannulation Technique
- 9.2.7. Implementation of an Ultrasound-Guided Vascular Cannulation Protocol
- 9.2.8. Common Problems, Complications, and Practical Advice

9.3. Thoracentesis and Pericardiocentesis
- 9.3.1. Indications and Advantages of the Anatomical Reference Technique
- 9.3.2. Basic Aspects: Ultrasound Esp and Ultrasound Anatomy
- 9.3.3. Ultrasound Specifications and Pericardial Drainage Technique
- 9.3.4. Ultrasound Specifications and Thoracic Drainage Technique
- 9.3.5. Common Problems, Complications, and Practical Advice

9.4. Paracentesis
- 9.4.1. Indications and Advantages of the Anatomical Reference Technique
- 9.4.2. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
- 9.4.3. Ultrasound Specifications and Technique
- 9.4.4. Common Problems, Complications, and Practical Advice

9.5. Lumbar Puncture
- 9.5.1. Indications and Advantages of the Anatomical Reference Technique
- 9.5.2. Basic Aspects: Ultrasound Specifications and Ultrasound Anatomy
- 9.5.3. Technique
- 9.5.4. Common Problems, Complications, and Practical Advice

9.6. Drainage and Probing
- 9.6.1. Suprapubic Probing
- 9.6.2. Collection Drainage
- 9.6.3. Extraction of Foreign Bodies

Module 10. Clinical Pediatric Ultrasound

10.1. Technical Requirements
- 10.1.1. Ultrasound at the Patients Bedside
- 10.1.2. Physical Space
- 10.1.3. Basic Equipment
- 10.1.4. Equipment for Interventionalist Ultrasounds
- 10.1.5. Ultrasound Scanners and Probes

10.2. Examination Technique
- 10.2.1. Pediatric Patient Preparation
- 10.2.2. Tests and Probes
- 10.2.3. Ultrasound Section Planes
- 10.2.4. Examination System
- 10.2.5. Ultrasound-Guided Procedures
- 10.2.6. Images and Documentation
- 10.2.7. Test Report

10.3. Pediatric Sonoanatomy and Sonophysiology
- 10.3.1. Normal Anatomy
- 10.3.2. Sonoanatomy
- 10.3.3. Sonophysiology of a Child in the Different Stages of Development
- 10.3.4. Variants of Normality
- 10.3.5. Dynamic Ultrasound

10.4. Ultrasound of the Major Pediatric Syndromes
- 10.4.1. Emergency Thorax Ultrasound
- 10.4.2. Acute Abdomen
- 10.4.3. Acute Scrotum

10.5. Ultrasound-Guided Procedures in Pediatrics
- 10.5.1. Vascular Access
- 10.5.2. Extraction of Superficial Foreign Bodies
- 10.5.3. Pleural Effusion

10.6. Introduction to Neonatal Clinical Ultrasound
- 10.6.1. Emergency Transfontanellar Ultrasound
- 10.6.2. Most Common Examination Indications in Emergencies
- 10.6.3. Most Common Pathologies in Emergencies

This program employs didactic methods such as Relearning that will help you master state-of-the-art concepts and work protocols"

07

Clinical Internship

After passing the online theoretical period, the program includes a practical preparation period. This intensive and immersive face-to-face training is a unique learning opportunity. In it, the nurse will face the most current challenges of their area of work through modern procedures and technologies.

Carry out your clinical internship in hospitals with the best health care technology"

The Internship Program period consists of a intensive face-to-face program in a center a prestigious hospital. This educational modality will have a duration of 3 weeks, distributed in days of 8 consecutive hours, from Monday to Friday. Throughout this period, the professional will receive personalized guidance led by a highly experienced assistant tutor. Additionally, they will work together with experts with extensive experience in the planning and approach to patients in Critical Care units and those who require Clinical Ultrasound interventions in the health care setting.

In this completely practical training proposal, the activities are aimed at developing and perfecting the necessary skills 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.

The practical education will be carried out with the active participation of the student performing the activities and procedures of each area of skills (learning to learn and learning to do), with the accompaniment and guidance of teachers and other fellow trainees who facilitate teamwork and multidisciplinary integration as as transversal skills for of nursing clinical practice (learning to be and learning to relate).

The program will help you deal with complex cases from a nursing point of view, under the guidance of leading experts"

The procedures described below will be the basis of the practical part of the training, and their implementation is subject to both the suitability of the patients and the availability of the center and its volume of work, the proposed activities being the following:

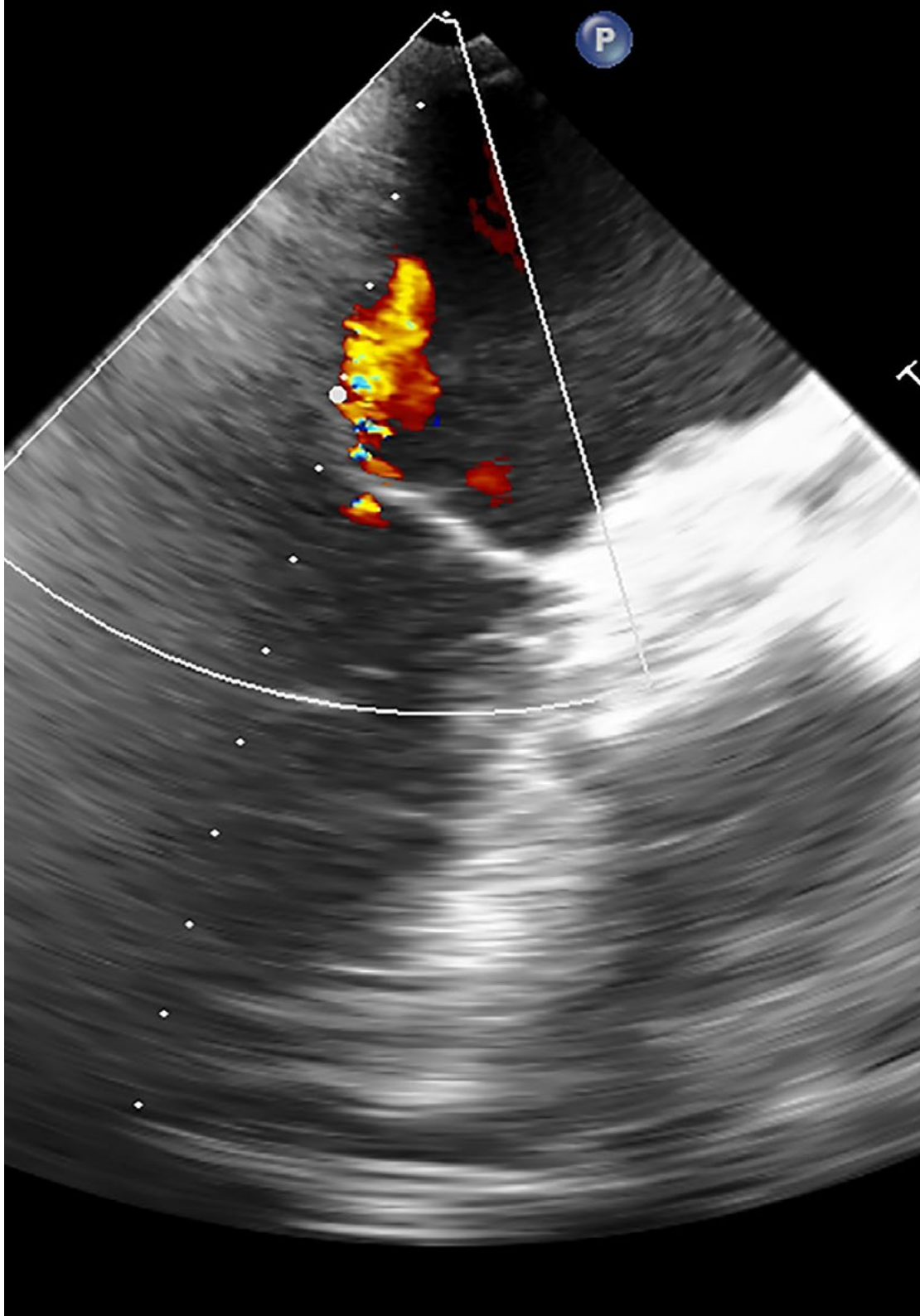
Module	Practical Activity
Latest technologies of Clinical Ultrasound for Nursing	Differentiate the types of Doppler available in the diagnostic imaging market and their most frequent uses
	Handle the most advanced ultrasound equipment and its different applications in the clinical setting
	Identify the technological devices that make possible the diagnostic imaging of small parts such as the ocular and optic nerve ultrasound
	Master the transducers and probes that facilitate the diagnostic imaging process
Protocols of Clinical Ultrasound and Intensive Care	Review and maintain order and cleanliness of rooms and ultrasound scanners
	Replenish necessary material
	Collaborate in the performance of basic sonoanatomy.
	Collect the images and tests obtained by Clinical Ultrasound
Nursing Procedures in Clinical Ultrasound	Apply NICE venous ultrasound methodologies
	Implement ultrasound-guided pericardiocentesis techniques
	Use paracentesis methods to support ultrasound procedures
	Perform the most modern techniques of drainage and catheterization, for which the nursing staff is responsible.
Disinfection protocols of ultrasound material for Nursing	Implement Ultrasound Transducer Reprocessing Guidelines
	Develop high-level disinfection for invasive transvaginal probes
	Use autoclaves and other intensive cleaning equipment

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 entity commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the Internship Program period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship 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 Internship Program, 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: the student who passes the Hybrid Professional Master's Program will receive a certificate accrediting their stay at the center.

5. EMPLOYMENT RELATIONSHIP: the Hybrid Professional Master's Program shall not constitute an employment relationship of any kind.

6. PRIOR EDUCATION: Some centers may require a certificate of prior education for the Internship Program. 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 Program will not include any element not described in these 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. He will provide the student with all the necessary information to facilitate the procedures in any case.

08

Where Can I Do the Clinical Internship?

This Hybrid Professional Master's Degree culminates its itinerary with an internship program in a prestigious hospital center. From that institution, the nurse will apply everything they have learned directly, assisting physicians and offering the best care to critical patients. Additionally, TECH offers the possibility of taking this clinical practice in institutions located in different cities, reaffirming its commitment to an affordable education, with scientific basis and according to the best global standards.

Complement your theoretical knowledge on Clinical Ultrasound in Nursing with an intensive and rigorous clinical practice"

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

Hospital HM Modelo

Country: Spain
City: La Coruña

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

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

Related internship programs:
- Anaesthesiology and Resuscitation
- Palliative Care

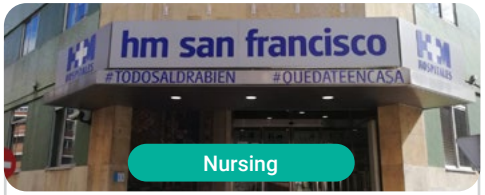
Hospital HM Rosaleda

Country: Spain
City: La Coruña

Address: Rúa de Santiago León de Caracas, 1, 15701, Santiago de Compostela, A Coruña

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

Related internship programs:
- Hair Transplantation
- Orthodontics and Dentofacial Orthopedics



Hospital HM San Francisco

Country: Spain
City: León

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

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

Related internship programs:
- Update in Anesthesiology and Resuscitation
Trauma Nursing

Hospital HM Regla

Country: Spain
City: León

Address: Calle Cardenal Landázuri, 2, 24003, León

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

Related internship programs:
- Update on Psychiatric Treatment in Minor Patients

Hospital HM Nou Delfos

Country: Spain
City: Barcelona

Address: Avinguda de Vallcarca, 151, 08023 Barcelona

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

Related internship programs:
- Aesthetic Medicine
- Clinical Nutrition in Medicine

Hospital HM Madrid

Country: Spain
City: Madrid

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

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

Related internship programs:
- Palliative Care
- Anaesthesiology and Resuscitation

Hospital HM Montepríncipe

Country: Spain
City: Madrid

Address: Av. de Montepríncipe, 25, 28660, Boadilla del Monte, Madrid

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

Related internship programs:
- Palliative Care
- Aesthetic Medicine

Hospital HM Torrelodones

Country: Spain
City: Madrid

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

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

Related internship programs:
- Anaesthesiology and Resuscitation
- Palliative Care

Hospital HM Sanchinarro

Country: Spain
City: Madrid

Address: Calle de Oña, 10, 28050, Madrid

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

Related internship programs:
- Anaesthesiology and Resuscitation
- Palliative Care

Hospital HM Nuevo Belén

Country: Spain
City: Madrid

Address: Calle José Silva, 7, 28043, Madrid

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

Related internship programs:
- General and Digestive System Surgery
- Clinical Nutrition in Medicine

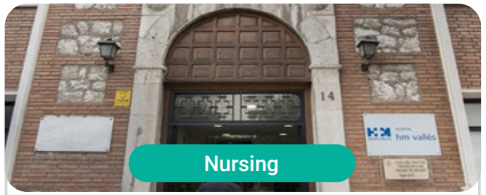
Hospital HM Puerta del Sur

Country: Spain
City: Madrid

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

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

Related internship programs:
- Palliative Care
- Clinical Ophthalmology



Hospital HM Vallés

Country: Spain
City: Madrid

Address: Calle Santiago, 14, 28801, Alcalá de Henares, Madrid

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

Related internship programs:
- Gynecologic Oncology
- Clinical Ophthalmology

Policlínico HM Distrito Telefónica

Country: Spain
City: Madrid

Address: Ronda de la Comunicación, 28050, Madrid

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

Related internship programs:
- Optical Technologies and Clinical Optometry
- General and Digestive System Surgery

Policlínico HM Gabinete Velázquez

Country: Spain
City: Madrid

Address: C. de Jorge Juan, 19, 1° 28001, 28001, Madrid

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

Related internship programs:
- Clinical Nutrition in Medicine
- Aesthetic Plastic Surgery

Policlínico HM Las Tablas

Country: Spain
City: Madrid

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

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

Related internship programs:
Trauma Nursing
- Diagnosis in Physiotherapy

Policlínico HM Moraleja

Country: Spain
City: Madrid

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

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

Related internship programs:
- Rehabilitation Medicine in Acquired Brain Injury Management

Policlínico HM Sanchinarro

Country: Spain
City: Madrid

Address: Av. de Manoteras, 10, 28050, Madrid

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

Related internship programs:
- Gynecological Care for Midwives
-Nursing in the Digestive System Service

Policlínico HM Imi Toledo

Country: Spain
City: Toledo

Address: Av. de Irlanda, 21, 45005, Toledo

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

Related internship programs:
- Electrotherapy in Rehabilitation Medicine
- Hair Transplantation

09

Methodology

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

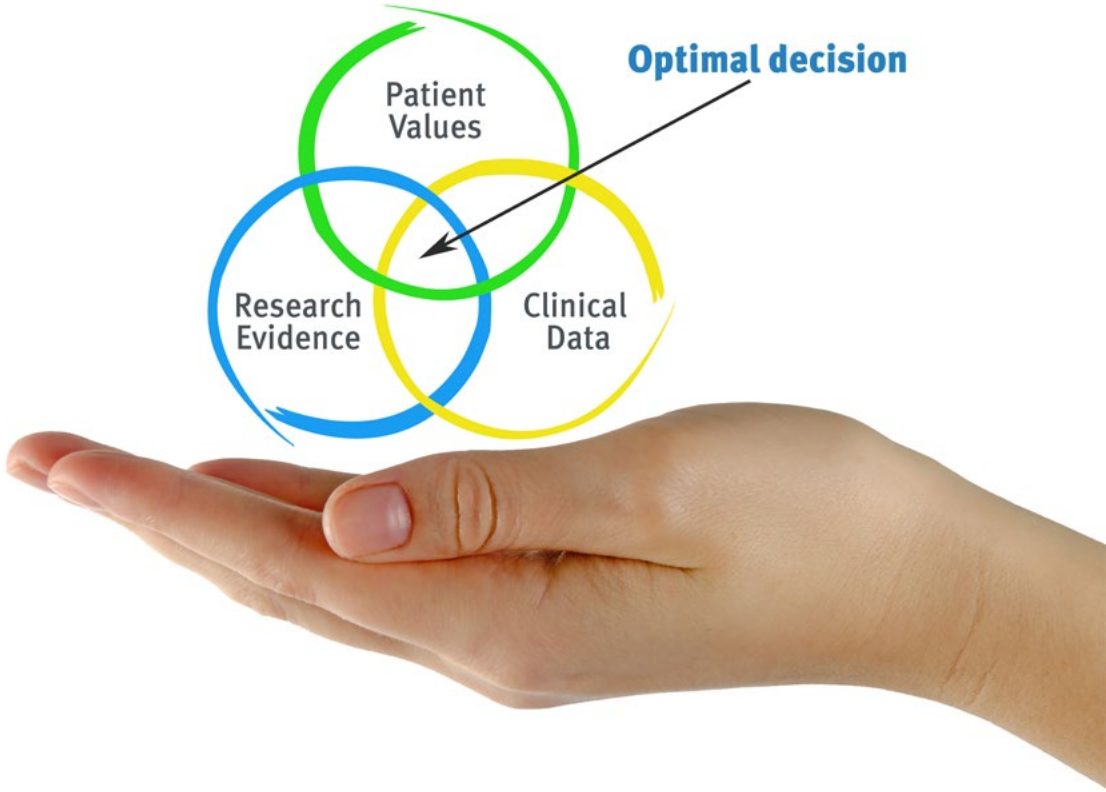
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

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 Nursing School we use the Case Method

In a given situation, what should a professional do? 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. Nurses learn better, faster, and more sustainably over time.

With TECH, nurses can experience a learning methodology 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, in an attempt to recreate the real conditions in professional nursing 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:

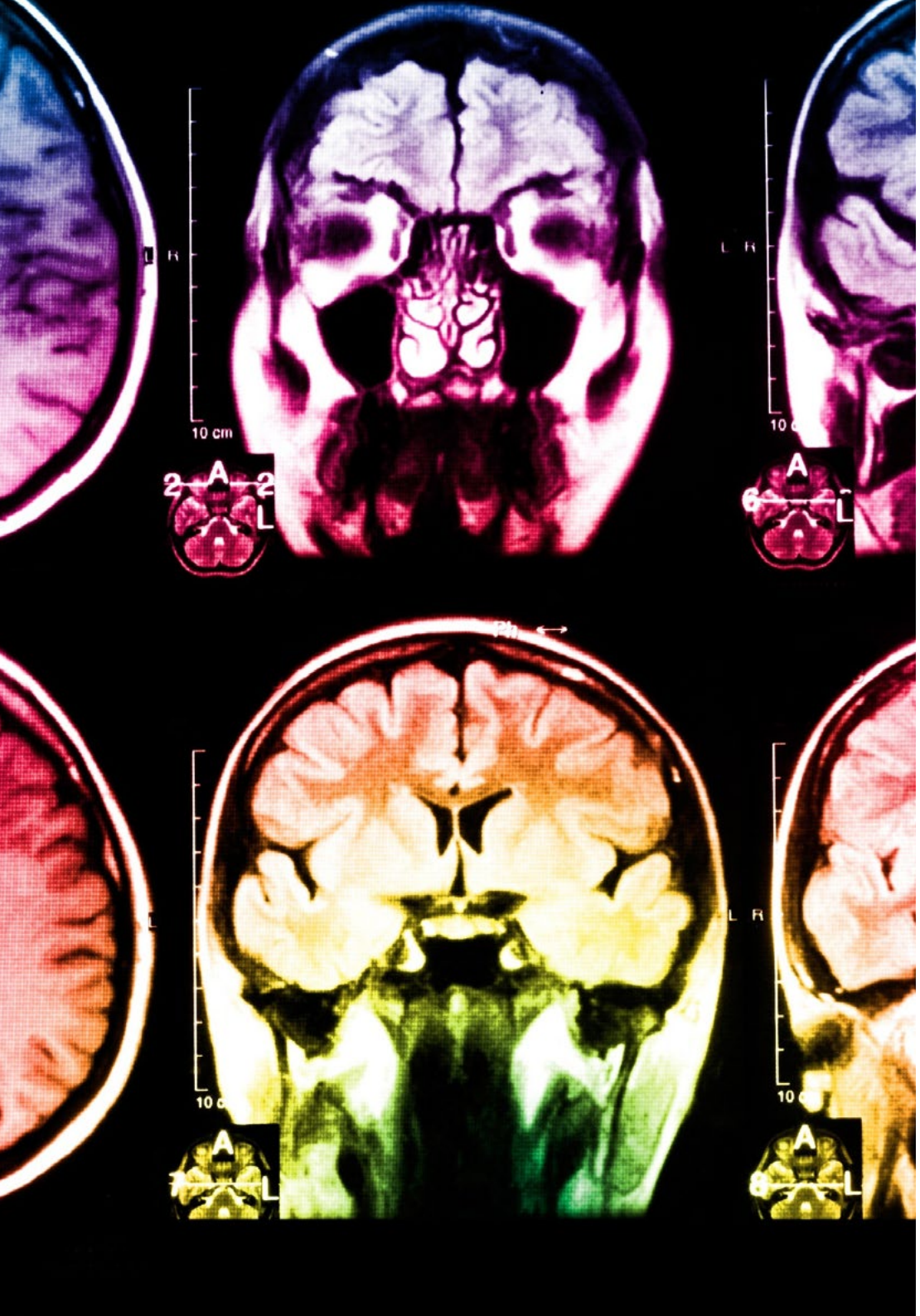
1. Nurses who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the nursing professional to better integrate knowledge acquisition into the hospital setting or primary care.
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 case studies with a 100% online learning system based on repetition combining a minimum of 8 different elements in each lesson, which is a real revolution compared to the simple study and analysis of cases.

The nurse will learn through real cases and by solving 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 we have trained more than 175,000 nurses with unprecedented success in all specialities regardless of practical workload. 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.

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 really 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.

Nursing 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 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 them as many times as you want.

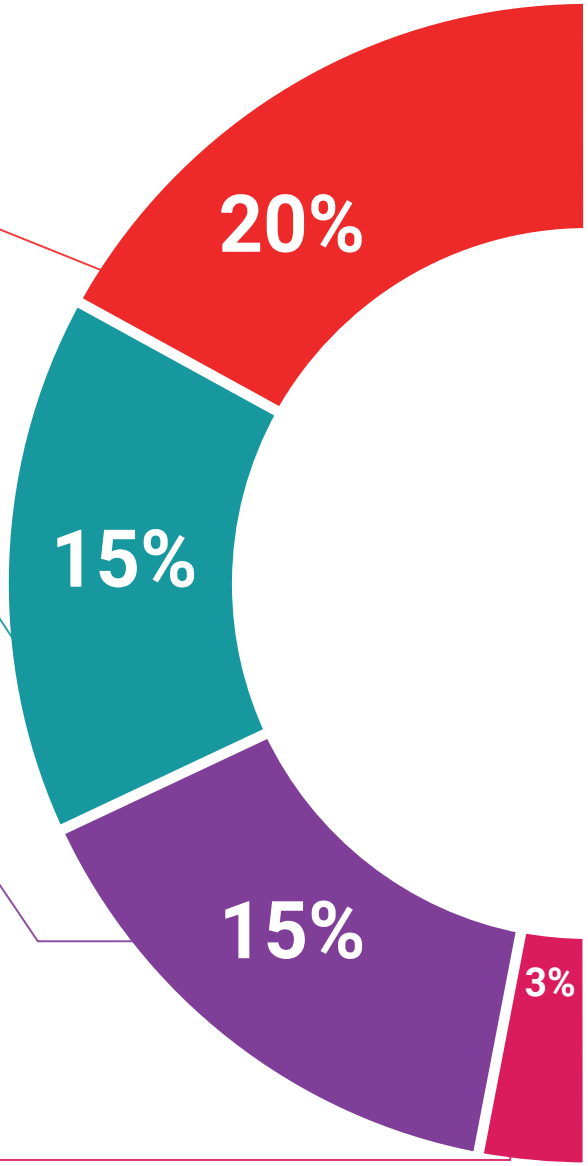
Interactive Summaries

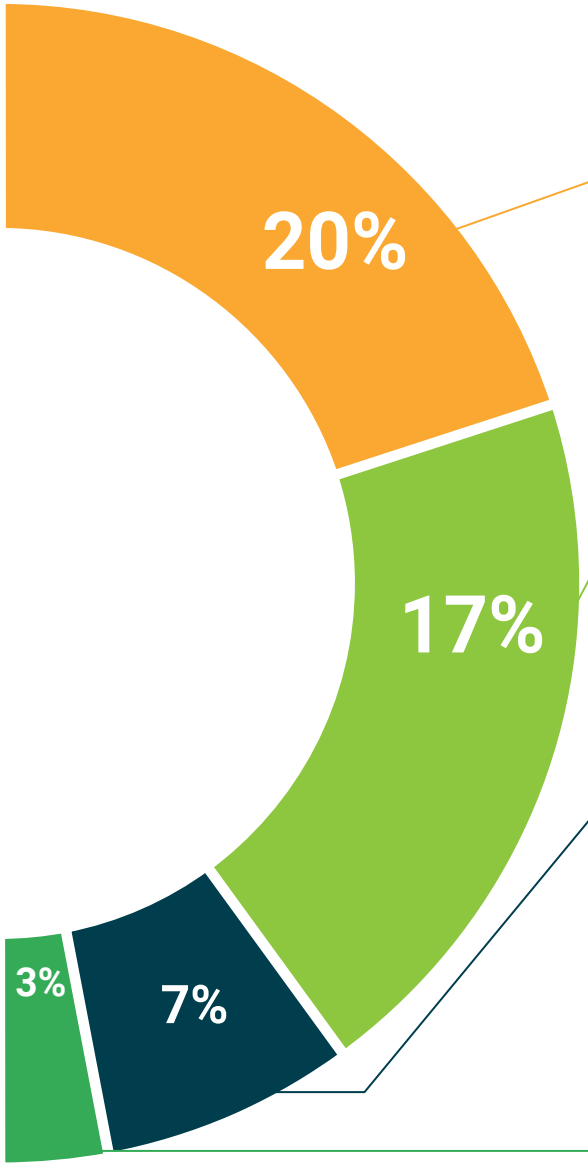
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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 suggesting that observing third-party experts can be useful.

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.

10

Certificate

The Hybrid Professional Master's Degree in Clinical Ultrasound in Emergencies and Intensive Care for Nursing for guarantees, in addition to the most rigorous and updated training, access to a Hybrid Professional Master's Degree issued by TECH Technological University.

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

This **Hybrid Professional Master's Degree in Clinical Ultrasound in Emergencies and Intensive Care for Nursing** contains the most complete and updated program on the professional and academic setting.

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

In addition to the certificate, students will be able to obtain an academic transcript, as well as a certificate outlining the contents 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 Clinical Ultrasound in Emergencies and Intensive Care for Nursing**

Course Modality: **Hybrid (Online + Clinical Internship)**

Duration: **12 months.**

Certificate: **TECH Technological University**

Teaching Hours: **1,620 h.**

tech technological university

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

Clinical Ultrasound in Emergencies and Intensive Care for Nursing

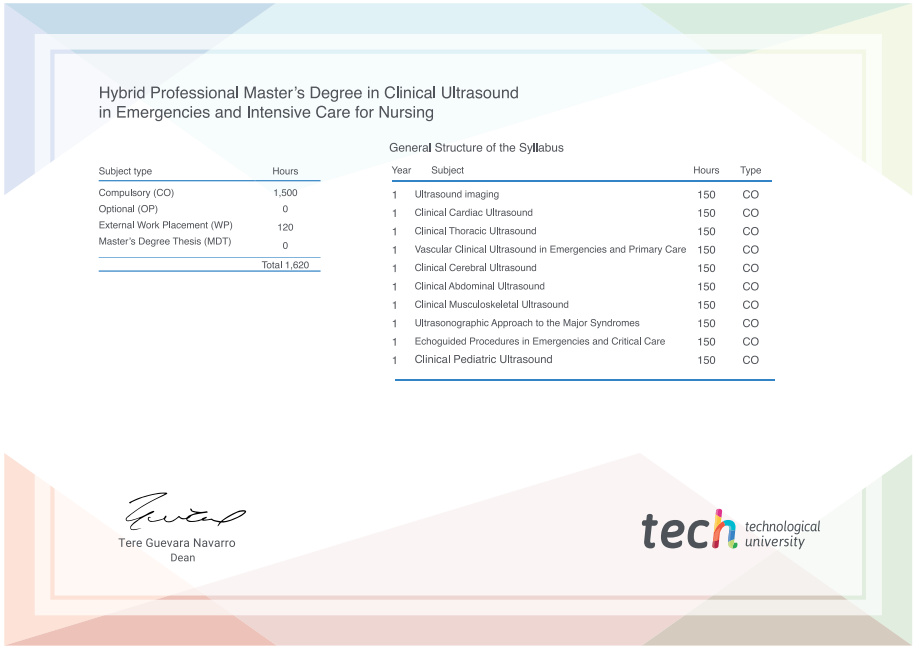
This is a qualification awarded by this University, with a duration of 1,620 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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

June 17, 2020

Tere Guevara Navarro
Dean

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



Hybrid Professional Master's Degree in Clinical Ultrasound in Emergencies and Intensive Care for Nursing

Subject type	Hours
Compulsory (CO)	1,500
Optional (OP)	0
External Work Placement (WP)	120
Master's Degree Thesis (MDT)	0
	Total 1,620

General Structure of the Syllabus

Year	Subject	Hours	Type
1	Ultrasound imaging	150	CO
1	Clinical Cardiac Ultrasound	150	CO
1	Clinical Thoracic Ultrasound	150	CO
1	Vascular Clinical Ultrasound in Emergencies and Primary Care	150	CO
1	Clinical Cerebral Ultrasound	150	CO
1	Clinical Abdominal Ultrasound	150	CO
1	Clinical Musculoskeletal Ultrasound	150	CO
1	Ultrasonographic Approach to the Major Syndromes	150	CO
1	Echoguided Procedures in Emergencies and Critical Care	150	CO
1	Clinical Pediatric Ultrasound	150	CO

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Dean

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*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.

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Hybrid Professional Master's Degree

Clinical Ultrasound in Emergencies and Intensive Care for Nursing

Course Modality: **Hybrid (Online + Clinical Internship)**
Duration: **12 months**
Certificate: **TECH Technological University**
Teaching Hours: **1,620 h.**

Hybrid Professional Master's Degree

Clinical Ultrasound in Emergencies and Intensive Care for Nursing

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