

# Postgraduate Certificate

## Hemodynamic Emergencies in the PICU





## Postgraduate Certificate Hemodynamic Emergencies in the PICU

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/medicine/postgraduate-certificate/hemodynamic-emergencies-picu](http://www.techtute.com/us/medicine/postgraduate-certificate/hemodynamic-emergencies-picu)

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# 01

# Introduction

Hemodynamic Emergencies in the Pediatric Intensive Care Unit (PICU) represent a critical and complex challenge that requires a rapid and accurate response. These situations involve severe alterations in blood circulation and cardiovascular stability in the youngest patients. Therefore, it is vital to have a multidisciplinary team of experts specialized to manage this type of situation, using advanced technologies and innovative treatment protocols. In this context, TECH has designed this distinguished program, with the aim of offering physicians 100% online specialization, so that they can specialize by adapting their study time to their work routine.



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*Thanks to this TECH  
Postgraduate Certificate, you will  
be prepared to act effectively in  
Hemodynamic Emergencies in  
the Pediatric Intensive Care Unit"*

Historically, the evolution of strategies and technologies to address Hemodynamic Emergencies in the PICU has been significant. Years ago, therapeutic options were limited and treatments were reactive.

However, with innovation in medical science and devices, sophisticated monitoring tools have been developed, allowing continuous and accurate assessment of patient status. In addition, advances in pharmacology have also played an important role. The introduction of specific vasoactive and inotropic drugs has allowed for the development of new and more effective drugs.

According to the European Society for Pediatric Intensive Care, the implementation of evidence-based protocols and the use of advanced equipment has significantly reduced mortality from Septic Shock by 30% in Europe. Therefore, TECH has been involved in the development of a cutting-edge program, through which they provide physicians with a comprehensive specialization in this field, so that they can successfully face the challenges of a complex field.

In this Postgraduate Certificate, complications such as Hypertension, Thrombosis and Bradyarrhythmias, as well as the implementation of protocols and strategies for their management, will be discussed in depth. At the same time, the underlying causes of Cardiac Failures in children will be studied in depth, and imaging techniques and biomarkers for early diagnosis will be mastered. All this, with the support of a prestigious teaching staff, which will provide analysis of real case studies and quality teaching material. You will also be able to take advantage of the innovative Relearning methodology, pioneered by TECH, which consists of the internalization of key concepts through repetition, as well as of a 100% online syllabus.

This **Postgraduate Certificate in Hemodynamic Emergencies in the PICU** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ The development of practical cases presented by experts in Hemodynamic Emergencies in the PICU
- ♦ The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable for professional practice
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



*You will get a comprehensive and in-depth vision of this area of knowledge and become a professional reference, through the best teaching materials, at the forefront of technology and education"*

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*You will master the imaging techniques and biomarkers for the early diagnosis of Heart Failure in Pediatrics, thanks to a course of excellence in the best digital university in the world according to Forbes"*

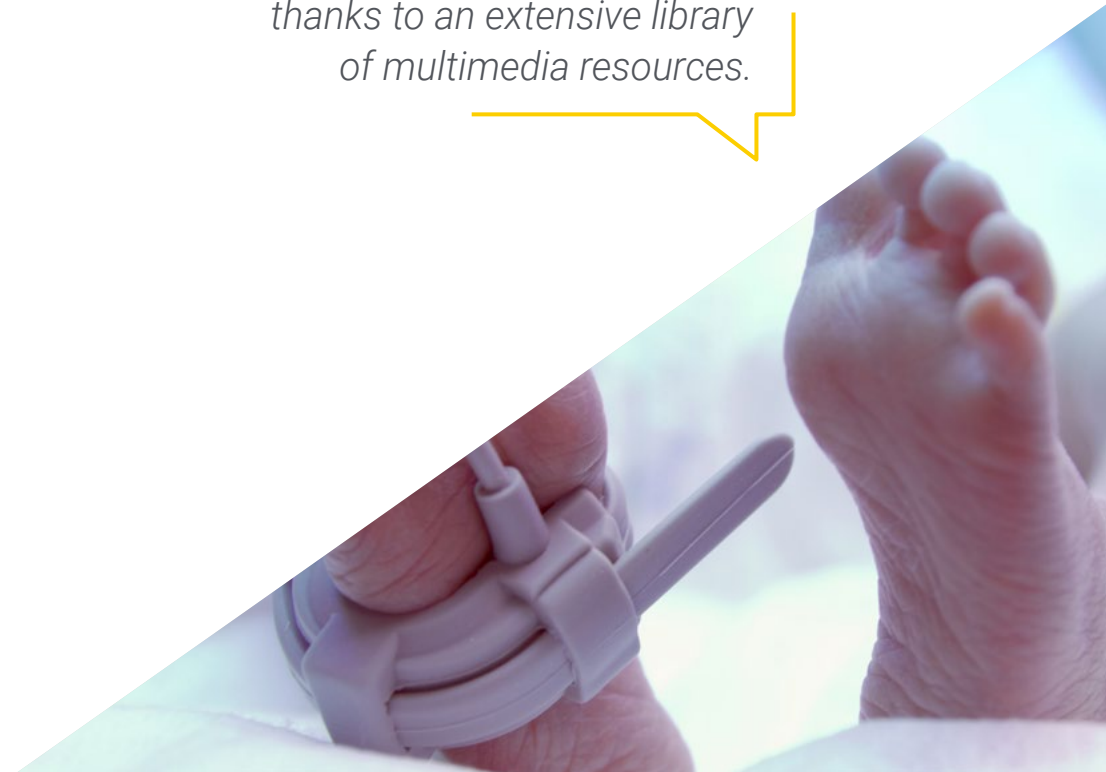
The program's teaching staff includes professionals from the sector who contribute their work experience to this specializing program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the course. For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Specialize through an innovative methodology, with which you will achieve optimal results and in which TECH is a pioneer: Relearning.*

*You will analyze the different types of emergency situations and Hemodynamic Pathologies that you may face in a PICU, thanks to an extensive library of multimedia resources.*



# 02 Objectives

The syllabus of this Postgraduate Certificate will allow students to update their knowledge, acquiring fundamental competences to develop their clinical practice efficiently and to stand out in a complex sector. Therefore, through a complete multimedia and interactive material, doctors will be prepared to interpret electrocardiograms, establishing differences between pediatric and adult patterns. In addition, they will be able to establish accurate diagnoses, thanks to the mastery of tools such as Echocardiography or laboratory tests.







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*You will be skilled to use effective diagnostic tools, as well as to accurately interpreting electrocardiograms in pediatric patients. What are you waiting for to enroll?*



## General Objectives

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- ♦ Integrate Intervention Protocols based on best scientific evidence
- ♦ Provide a comprehensive understanding of hemodynamic monitoring techniques and tools specific to the pediatric population



*Achieve your objectives through quality educational content and interactive resources that will contribute to the internalization of the most relevant concepts and practices"*





## Specific Objectives

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- ♦ Accurately interpret Electrocardiograms (ECGs) in children, identifying key differences between pediatric and adult ECG patterns
- ♦ Instruct in advanced strategies for the management of pediatric Shock, including optimization of blood volume, the use of inotropic and vasopressor agents and airway management
- ♦ Provide in-depth knowledge for the diagnosis of Heart Failure in children, using diagnostic tools such as Chest X-rays, Echocardiography and laboratory tests
- ♦ Specialize in the integral management of Pediatric Heart Failure, ranging from pharmacological treatment to the consideration of Mechanical Ventricular Assist and Cardiac Transplantation, when appropriate

# 03

## Course Management

In its commitment to offer quality specialization, TECH has experts of excellence, who will provide graduates with a holistic vision and the essential skills to develop professionally. Therefore, in this Postgraduate Certificate, doctors will be prepared by a teaching staff that has an extensive professional background and a proven academic career. In addition, these mentors will offer innovative and effective pedagogical tools, so that students can position themselves as reference specialists and achieve success.





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*In this Postgraduate Certificate you will have the support of expert professionals, with a wide professional background and a solid academic specialization”*

## Management



### Dr. Ocete Hita, Esther

- ♦ Head of the Pediatric Hospitalization Section of Virgen de las Nieves University Hospital of Granada
- ♦ FEA Pediatrics in the Pediatric Intensive Care Unit of Virgen de las Nieves University Hospital of Granada
- ♦ Associate Professor in the Faculty of Medicine at the University of Granada
- ♦ Specialist Pediatrician
- ♦ Doctor of Medicine
- ♦ Degree in Medicine

## Teaching Staff

### Dr. García Soler, Patricia

- ♦ FEA in Critical Care and Pediatric Emergencies of the Regional University Hospital of Malaga
- ♦ Specialist in Pediatrics at the Regional University Hospital of Malaga
- ♦ University Expert in Clinical Research and Epidemiology by the Andalusian School of Pediatrics
- ♦ Doctor of Medicine and Surgery from the University of Málaga
- ♦ Graduate in Medicine and Surgery, University of Malaga

### Dr. Moyano Leiva, Olalla

- ♦ FEA in Pediatrics in the PICU of the Maternal-Children's Hospital, Málaga
- ♦ FEA in Pediatrics in the PICU of the Virgen del Rocio Hospital, Seville
- ♦ FEA in Pediatrics in the Neonatal and PICU of the Hospital Nisa Pardo de Aravaca, Madrid
- ♦ Rotation in the Neonatal Intensive Care Unit, Hospital Vall d'Hebron, Barcelona
- ♦ Specialist in Pediatrics and its Specific Areas, subspecialty in Pediatric Intensive Care, Maternal Hospital, Malaga
- ♦ Degree in Medicine and Surgery from the University of Granada

**Dr. Collado Caparrós, Juan Francisco**

- ♦ FEA in Pediatrics and Pediatric Critical Care at the University Regional Hospital, Malaga
- ♦ FEA in Pediatrics in the PICU of Virgen de la Arrixaca University Hospital, Murcia
- ♦ Specialist in Pediatrics and its Specific Areas by the Regional University Hospital of Malaga
- ♦ Master's Degree of Research in Social and Health Sciences by the Catholic University San Antonio of Murcia
- ♦ Master's Degree in Pediatric Emergencies from San Vicente Mártir Catholic University of Valencia
- ♦ Graduate in Medicine from the University of Córdoba

**Dr. Sanchíz Cárdenas, Sonia**

- ♦ FEA in Pediatrics, Emergency and Pediatric Critical Care at the Regional University Hospital, Malaga
- ♦ Assistant Specialist Physician in the Pediatric Intensive Care Unit of the Virgen de la Arrixaca Laboratory University Hospital, Murcia
- ♦ Specialist in Pediatrics and its Specific Areas by the Regional University Hospital of Malaga
- ♦ Master's Degree in Research in Social and Health Sciences from San Antonio de Murcia Catholic University
- ♦ Master's Degree in Pediatric Emergencies from the San Vicente Mártir Catholic University, Valencia
- ♦ University Expert in Pediatric Emergency Medicine, San Vicente Mártir Catholic University, Valencia
- ♦ Degree in Medicine from the University of Malaga

**Dr. Yun Castilla, Cristina**

- ♦ FEA in Critical Care Pediatrics and Pediatric Emergencies, Maternal-Children's Hospital, Malaga
- ♦ FEA in the Home Hospitalization Unit (HADO) of the Regional University Hospital, Malaga
- ♦ Pediatrician for PRIES Group, at Parque San Antonio Hospital, Malaga, and Xanit International Hospital, Benalmadena
- ♦ Specialist in Pediatrics and Specific Areas at the Carlos Haya Maternity and Children's Hospital, Malaga
- ♦ Online Master's Degree in Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease by Cardenal Herrera University
- ♦ University Master's Degree in Pediatric Emergencies by the University of Valencia
- ♦ Postgraduate Diploma in Statistics Applied to Health Sciences by the UNED (UNED).
- ♦ Degree in Medicine from the University of Córdoba
- ♦ Pediatric Intensive Care, Maternal-Children's Hospital, Malaga
- ♦ Degree in Medicine and Surgery from the University of Granada



*A unique, crucial and decisive learning experience to boost your professional development"*

# 04

## Structure and Content

The syllabus of this Postgraduate Certificate has been developed in a rigorous manner, focusing on the key points of the area of Hemodynamic Emergencies and taking into account the requirements of the teaching staff. Likewise, a program has been developed with which to apply the concepts in practical cases and in which the importance of mastering techniques and tools, such as monitoring or the Electrocardiogram, will be emphasized. In addition, we will delve into the different pathologies or crises that specialized physicians may have to face, in order to provide them with the competencies that will allow them to face the challenges efficiently.






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*Take advantage of the benefits of specialization through a syllabus developed under TECH's maxim of offering excellent material, with all the requirements of a prestigious teaching staff"*

## Module 1. Hemodynamic Emergencies in the Pediatric Intensive Care Unit

- 1.1. Hemodynamic Monitoring in Pediatrics
  - 1.1.1. Hemodynamic Monitoring in the Critically Ill Pediatric Patient
  - 1.1.2. Interpretation of Hemodynamic Data for the Identification and Treatment of Cardiovascular Function Alterations
  - 1.1.3. Evaluation of the Effectiveness of Therapeutic Interventions with Advanced Monitoring Techniques
- 1.2. The Electrocardiogram (ECG) in Pediatrics
  - 1.2.1. The Pediatric ECG Physiological Differences According to Age
  - 1.2.2. Diagnosis of Electrolyte Disorders, Congenital Heart Disease and Cardiomyopathies through ECG Analysis
  - 1.2.3. Management of Urgent Pediatric Arrhythmias based on ECG Presentation
- 1.3. Shock in Pediatrics: Early Recognition
  - 1.3.1. Identification of Early Signs and Symptoms of Shock in Children for Rapid interventions
  - 1.3.2. Shock in Pediatric Patients: Hypovolemic, Distributive, Cardiogenic, Obstructive
  - 1.3.3. Hemodynamic Monitoring Parameters for Early Detection of Shock
- 1.4. Shock Management in Pediatrics
  - 1.4.1. Evidence-based Resuscitation Protocols for the Treatment of Shock in Children
  - 1.4.2. Use of Fluid Therapy, Inotropes and Vasopressors in the Management of Pediatric Shock
  - 1.4.3. Assessment of Response to Treatment and Adjustment of Life Support Therapy according to the Individual Patient's Needs
- 1.5. Diagnosis of Heart Failure in Children
  - 1.5.1. Use of Imaging Techniques and Biomarkers for Early Diagnosis of Heart Failure in Pediatrics
  - 1.5.2. Acute and Chronic Heart Failure in Children: Clinical Manifestations
  - 1.5.3. Underlying Causes of Heart Failure in the Pediatric Population for Appropriate Etiological Management



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- 1.6. Management of Heart Failure in Pediatrics
    - 1.6.1. Implementation of Medical Management Strategies: Optimal Pharmacotherapy for Heart Failure in Children
    - 1.6.2. Surgical Management: Circulatory Assist Devices and Transplantation
    - 1.6.3. Monitoring and Management of Side Effects and Complications of Heart Failure Treatment
  - 1.7. Bradyarrhythmias in the Intensive Care Unit
    - 1.7.1. Causes of Bradyarrhythmia in critical pediatric patients.
    - 1.7.2. Management of Emergencies Associated with Bradyarrhythmias: Use of Temporary Pacemakers
    - 1.7.3. Continuous Monitoring and ECG Interpretation in the Management of Bradyarrhythmias
  - 1.8. Tachyarrhythmias in the Intensive Care Unit
    - 1.8.1. Tachyarrhythmias Based on the Clinical Presentation and ECG Findings in Children
    - 1.8.2. Implementation of Acute Management Protocols for Tachyarrhythmias: Antiarrhythmic and Cardioversion Medication
    - 1.8.3. Long-term Management Planning for Pediatric Patients with Recurrent Tachyarrhythmias
  - 1.9. Hypertension in Pediatrics
    - 1.9.1. Diagnosis and Evaluation of Hypertension in Children: Identification of Secondary Hypertension
    - 1.9.2. Management of Pediatric Hypertension with Lifestyle Modifications and Pharmacotherapy
    - 1.9.3. Monitoring of the Efficacy and Safety of Therapeutic Interventions in Children with Hypertension
  - 1.10. Thrombosis and Anticoagulation in Pediatrics
    - 1.10.1. Antithrombotic Prophylaxis in the PICU
    - 1.10.2. Treatment of Thrombosis in Pediatrics
    - 1.10.3. Indications for Anticoagulation in Pediatrics

05

# 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.



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*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. Gervas, 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.

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

The effectiveness of the method is justified by four fundamental achievements:

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



## Relearning Methodology

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

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

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





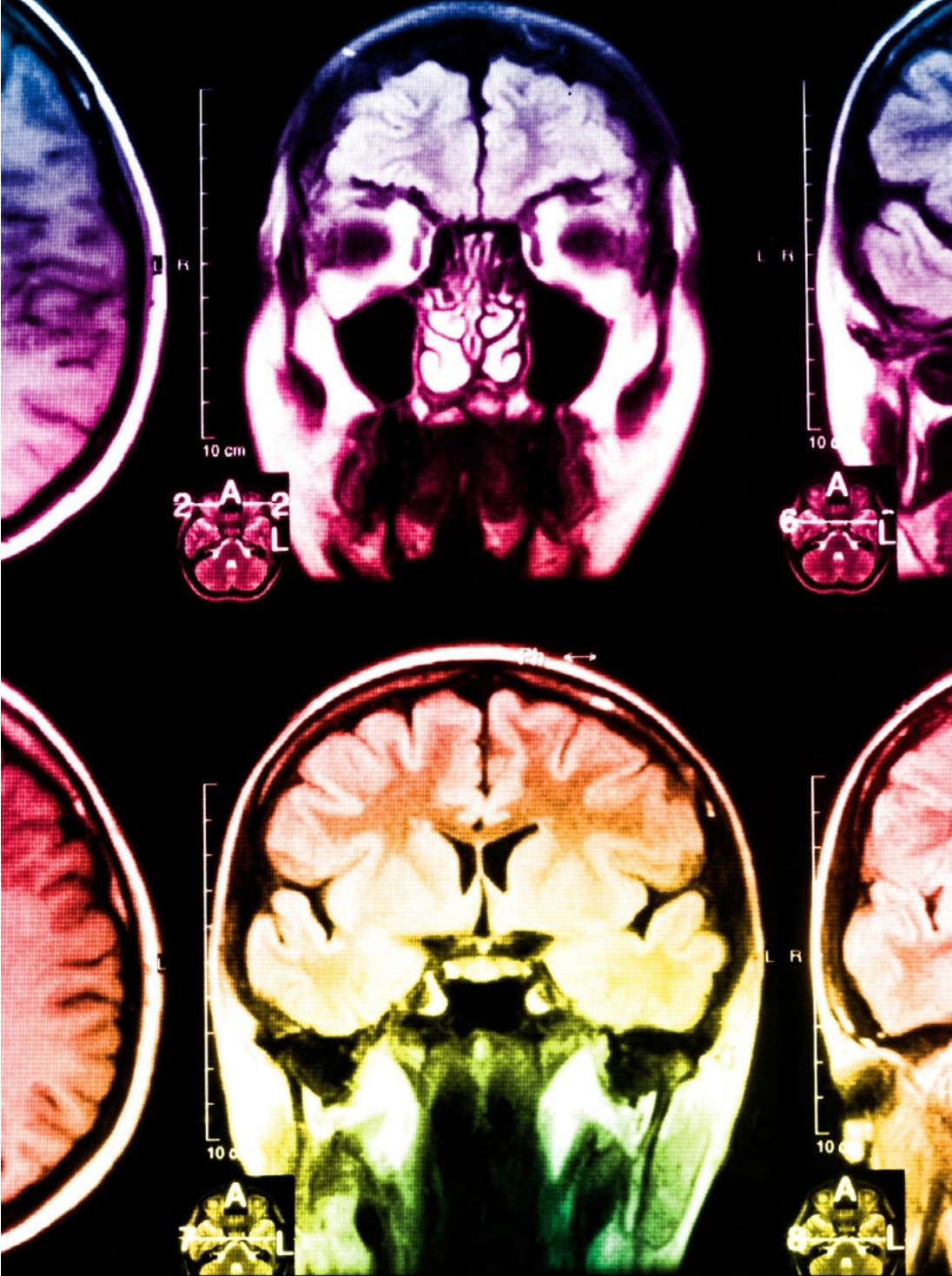
At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

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

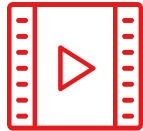
*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

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

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



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



#### Study Material

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

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



#### Surgical Techniques and Procedures on Video

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



#### Interactive Summaries

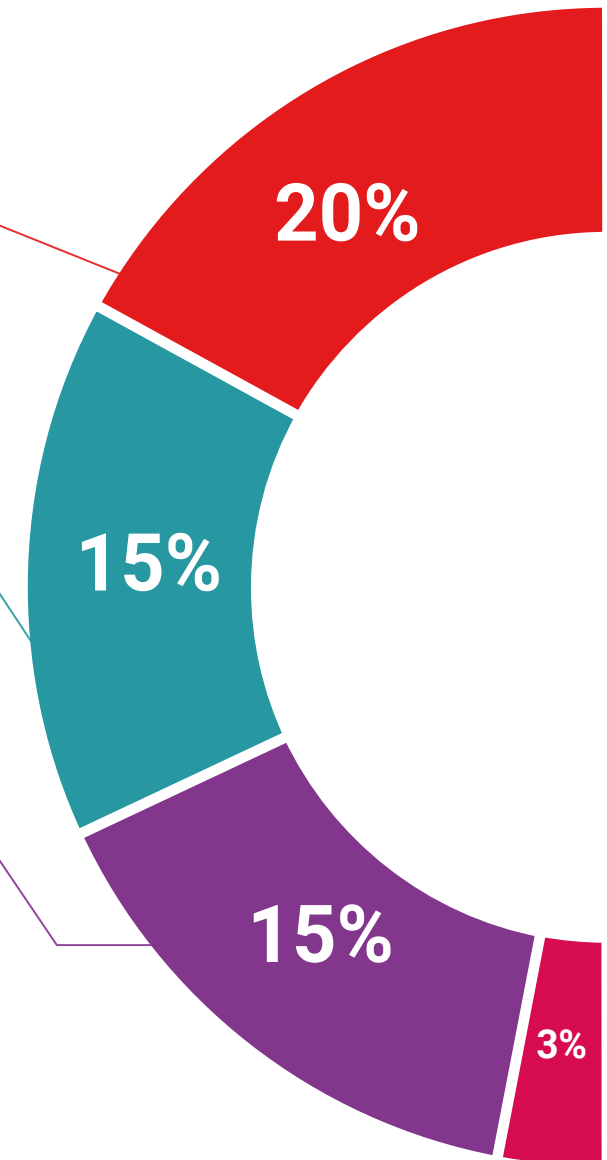
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

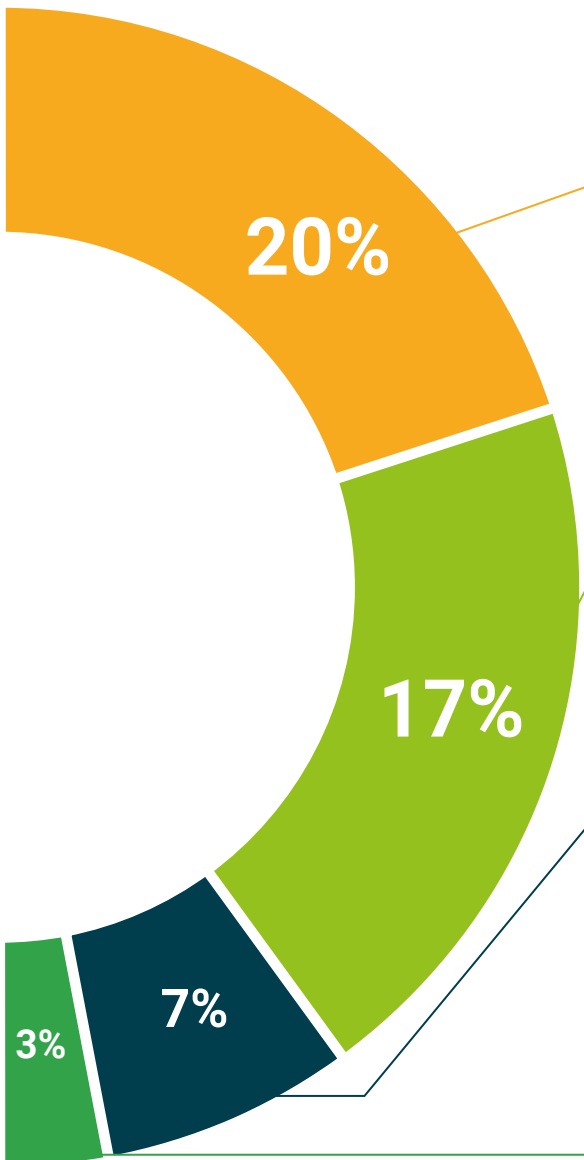
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

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





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

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



**Testing & Retesting**

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



**Classes**

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



**Quick Action Guides**

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



# 06 Certificate

The Postgraduate Certificate in Hemodynamic Emergencies in the PICU guarantees, in addition to the most accurate and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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

This private qualification will allow you to obtain a **Postgraduate Certificate in Hemodynamic Emergencies in the PICU** 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.

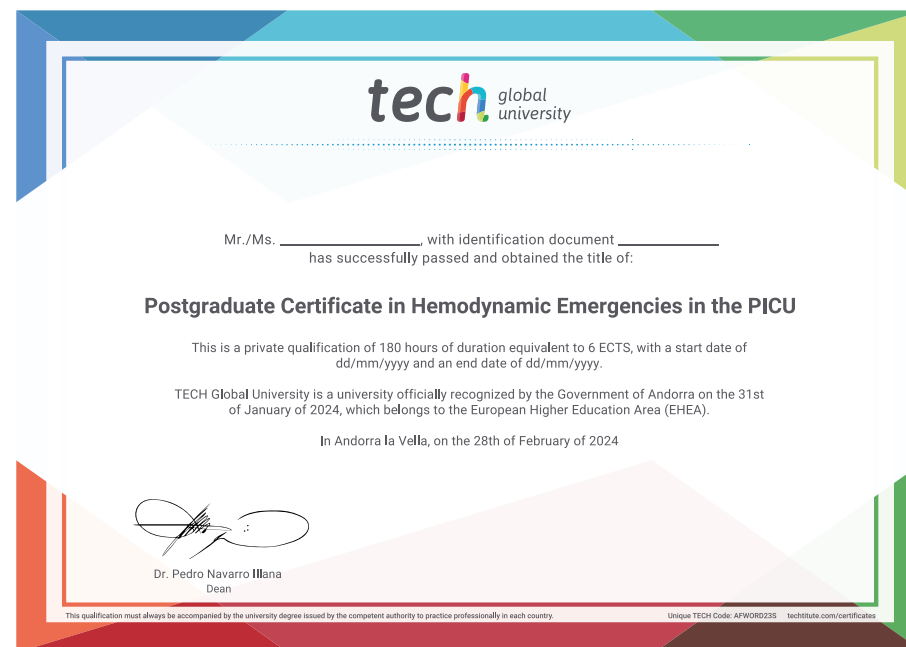
This **TECH Global University** private qualification is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Hemodynamic Emergencies in the PICU**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



\*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.



**Postgraduate Certificate**  
Hemodynamic Emergencies  
in the PICU

- » Modality: online
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- » Credits: 6 ECTS
- » Schedule: at your own pace
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# Postgraduate Certificate

## Hemodynamic Emergencies in the PICU

