

# Hybrid Professional Master's Degree

Diagnosis and Treatment  
in Pediatric Cardiology and  
Congenital Heart Disease





## Hybrid Professional Master's Degree

### Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.

Website: [www.techtitute.com/us/medicine/hybrid-professional-master-degree/hybrid-professional-master-degree-diagnosis-treatment-pediatric-cardiology-congenital-heart-disease](http://www.techtitute.com/us/medicine/hybrid-professional-master-degree/hybrid-professional-master-degree-diagnosis-treatment-pediatric-cardiology-congenital-heart-disease)

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# 01

# Introduction

Pediatric cardiologists, in their medical practice, face various complex pathologies that affect a very delicate segment of the population. Faced with this scenario, they must rely on scientific and technological resources designed to implement increasingly innovative clinical and surgical procedures. For this reason, TECH proposes this degree, which consists of two didactic moments that will update the professional on the main advances in this field of health. Initially, the specialist will study from a 100% online platform, with the assistance of various multimedia resources. Afterwards, they will benefit from an intensive face-to-face stay, led by high-level experts, where they will apply and perfect their new skills.





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*Enroll in this Hybrid Professional Master's Degree and master in a fast and flexible way the most advanced interventional tools to correct Congenital Heart Disease in pediatric ages"*

The medical sciences are continuously developing procedures for the diagnosis of congenital cardiac pathologies in children and adolescents, as well as their solution by means of increasingly accurate surgical techniques. Thus, innovative procedures such as Endomyocardial Biopsy, Aortogram and the management of arteriovenous fistulas, among others, have emerged. This scenario, which is constantly evolving, requires professionals who are increasingly prepared to face technological and clinical challenges. At the same time, the Pediatric Cardiology specialist faces a pedagogical scenario where educational options do not give equal relevance to the theoretical and practical development of all these elements.

TECH, in the midst of this competitive context, sets itself apart from other academic competitors by implementing a study modality adjusted to the needs of the physician. Thus, this Hybrid Professional Master's Degree in Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease was created. In it, the graduates will complete their update through two correctly framed periods. In first place, they will undergo a theoretical phase, with 1,500 hours of extension, where they will analyze the most recent tools for the detection of anomalies in the functioning and structure of the heart in children and adolescents. In addition, he will explore the latest trends in the management of cardiovascular deficiencies in the fetus, neonate and early stages of life. For all this didactic process, the student will have a fully interactive and online platform, as well as innovative learning methods such as Relearning.

Upon completion of these theoretical studies, students will have at their disposal a practical and face-to-face stay in health centers of great prestige. Your transit through these institutions, over 3 weeks, will allow you to apply the skills learned directly in real cases. In addition, you will be guided by internationally renowned experts who will supervise your academic progress while facilitating the management of complex tools that today distinguish the evolution of the area of Pediatric Cardiology.

This **Hybrid Professional Master's Degree in Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease** contains the most complete and up-to-date scientific program on the market. Its most outstanding features are:

- ♦ Development of more than 100 clinical cases presented by pediatric cardiology professionals with extensive experience in dealing with congenital heart pathologies
- ♦ 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
- ♦ Assessment and monitoring of the pediatric cardiac patient, the latest international recommendations on surgical procedures, pharmacology and diagnostic methods in pediatric cardiology
- ♦ Comprehensive systematized action plans for the main pathologies in the field of pediatric cardiology
- ♦ An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course
- ♦ With a special emphasis on evidence-based medicine and research methodologies in Pediatric Cardiology
- ♦ 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 centers on the international scene



*In just 3 weeks of intensive classroom practice, this Hybrid Professional Master's Degree will make you an expert in Cardiac Surgery in children and adolescents"*

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*With this degree, you will accumulate 1,620 hours of learning that will help you stay updated on the main techniques and therapeutic protocols of Pediatric Cardiology”*

In this Hybrid Professional Master's Degree, of a professionalizing nature and blended learning modality, the program is aimed at updating pediatric cardiologists who seek excellence in their clinical and surgical practice. The contents are based on the latest scientific evidence, and oriented in a didactic way to integrate theoretical knowledge in the daily care practice to enhance the best medical decisions and the comprehensive management of patients.

Thanks to its multimedia content elaborated with the latest educational technology, they will allow the Pediatric Cardiologist professional a situated and contextual learning, that is, a simulated environment that will provide an immersive learning programmed to learn in real situations. This program is designed around Problem-Based Learning, whereby the physician must try to solve the different professional practice situations that arise during the course. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.

*This Hybrid Professional Master's Degree is all you need to be updated with respect to stress tests and other functional tests of great diagnostic value for Pediatric Cardiology.*

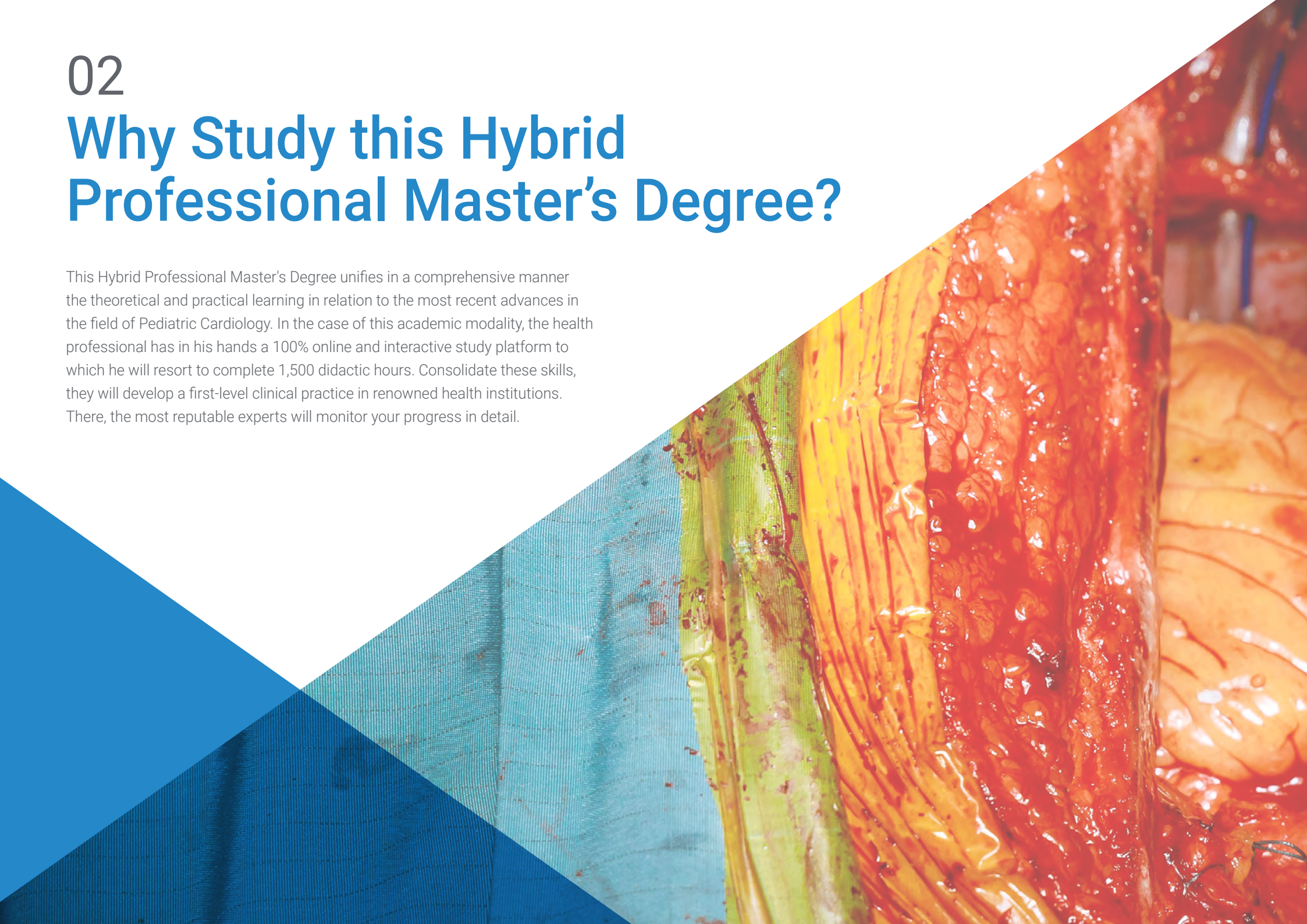
*In addition to pediatric congenital heart disease, you will learn about those heart disorders that afflict adults as a result of inadequate health care in childhood and adolescence.*



# 02

## Why Study this Hybrid Professional Master's Degree?

This Hybrid Professional Master's Degree unifies in a comprehensive manner the theoretical and practical learning in relation to the most recent advances in the field of Pediatric Cardiology. In the case of this academic modality, the health professional has in his hands a 100% online and interactive study platform to which he will resort to complete 1,500 didactic hours. Consolidate these skills, they will develop a first-level clinical practice in renowned health institutions. There, the most reputable experts will monitor your progress in detail.





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*TECH combines, in this degree, the main practical and theoretical novelties of Pediatric Cardiology, thus providing a pioneer academic modality of its kind in the educational market"*

### 1. Updating from the latest technology available

The field of Pediatric Cardiology has significant contributions from the point of view of scientific and technological research, whose application is still recent. In this Hybrid Professional Master's Degree, the physician will have the opportunity to analyze all of them and, thus, include their use in clinical and surgical practice. Thus, upon completion of the program, the graduate will be at the top of the vanguard in this area of health.

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

During the two educational moments that make up this Hybrid Professional Master's Degree, the pediatric cardiologist will have access to the best specialists in this health sector. Firstly, they will have access to a first-class academic faculty, which will be available to them during the theoretical stage with the help of TECH's online study platform.

In turn, in clinical practice, you will be directly linked to distinguished internationally renowned experts in the analysis of congenital heart disease.

### 3. Entering First-Class Clinical Environments

For the practical training of this Hybrid Professional Master's Degree, TECH carried out a thorough selection process. Thus, the physician who enrolls in the program will have access to healthcare environments with the most advanced equipment, in which they will be able to handle the latest diagnostic and surgical treatment technologies. At the same time, they will be guided by prestigious specialists who will help them to be updated in the application of the most up-to-date and complex procedures.



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

Over 3 weeks of face-to-face stay in a prestigious hospital center, the physician will execute everything they have learned in the previous and theoretical phase of this Hybrid Professional Master's Degree. From the first moment, they will deal with real cases with difficult cardiac pathologies and in pediatric ages, developing an updated vision of all the tools at their disposal for the personalized care of these patients.

#### 5. Expanding the Boundaries of Knowledge

By pursuing this Hybrid Professional Master's Degree, the physician will be able to choose from a variety of institutions to suit his or her academic interests and geographical location. This is possible thanks to TECH, the largest online university in the world, which with its wide network of professional contacts aims to ensure adequate training, according to international standards.

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*You will combine theory and professional practice through a demanding and rewarding educational approach”*

# 03 Objectives

With this Hybrid Professional Master's Degree Postgraduate Certificate, the physician will acquire the most up-to-date clinical and surgical skills for the approach to Congenital Heart Disease and other health problems in the infant heart. These competencies will be developed through two well-framed academic stages, dedicated separately to the theoretical and practical study of this scientific framework. Thanks to the degree, specialists will deepen their knowledge of non-invasive cardiac imaging techniques and functional tests, interventional diagnostic techniques and main surgical procedures against these conditions.





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*The two distinct academic stages that make up this Hybrid Professional Master's Degree will bring you up to date on the latest diagnostic and treatment protocols in Pediatric Cardiology”*



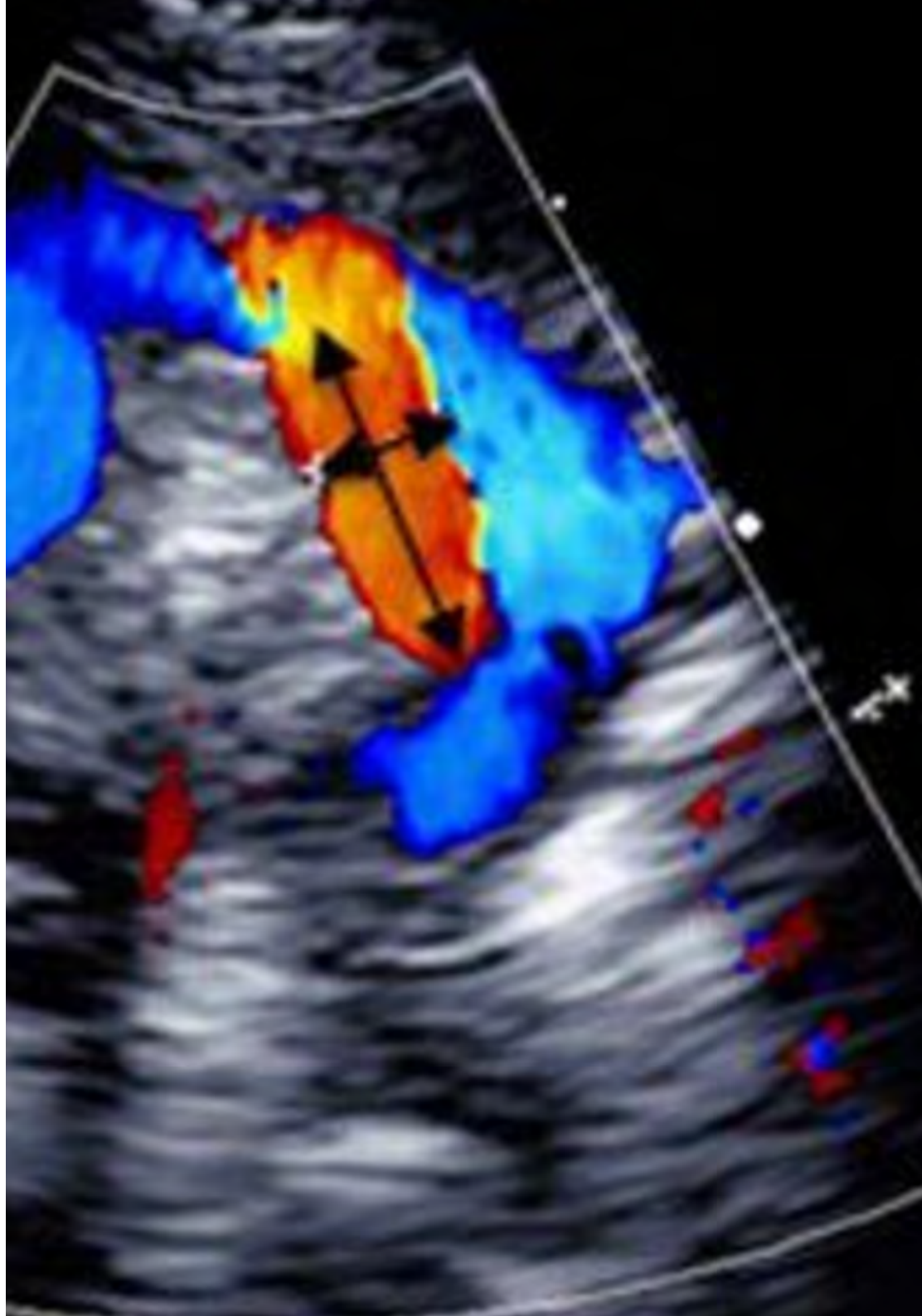
## General Objective

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- This Hybrid Professional Master's Degree enhances the rapid and flexible assimilation of the latest trends in Pediatric Cardiology and Congenital Heart Disease Diagnosis and Treatment. Thus, the physician will be able to expand his skills in the use of the latest technological resources to address different pathologies. They will also have the opportunity to put into practice everything they have learned through the exceptional practical stay, provided by TECH, to complement their knowledge in a face-to-face, immersive way, guided by internationally renowned experts

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*Boost your professional career with a holistic teaching, which allows you to advance both at a theoretical and practical level”*





## Specific Objectives

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### Module 1. Update in Pediatric Cardiology

- ♦ Identify, classify and orientate the different types of heart disease in pediatrics
- ♦ Delve into the nutrition and development in breastfeeding infants and children with congenital heart disease
- ♦ Study the pediatric heart failure and transplantation

### Module 2. Pulmonary Hypertension

- ♦ Identify, classify and manage pediatric pulmonary hypertension
- ♦ Master the diagnostic protocol for pediatric PHT
- ♦ Define when and how to perform cardiac catheterization
- ♦ Study lung transplantation

### Module 3. Non-Invasive Cardiac Imaging and Functional Tests

- ♦ Study the non-invasive diagnostic techniques that currently make it possible to diagnose a lesion and its functional situation
- ♦ Delve into transthoracic and transesophageal echocardiography
- ♦ Master the use of magnetic resonance imaging

### Module 4. Fetal Cardiology

- ♦ Define the appropriate evaluation and treatment of a new-born with heart disease
- ♦ Master prenatal screening Indications for Fetal Echocardiograph
- ♦ Distinguish the types of cardiac malformations
- ♦ Study labor preparation and perinatal management

### Module 5. Heart Disease, Cardiomyopathies, Tumors

- ♦ Study the basic aspects of invasive cardiology essential for clinical cardiology professionals
- ♦ Specialize in Kawasaki disease
- ♦ Differentiate myocarditis and cardiomyopathy

### Module 6. General Basis of Arrhythmias in Fetal and Pediatric Age Group

- ♦ Review the current status for dealing with different arrhythmias that could occur in fetuses, breastfeeding infants and children, with their clinical and invasive aspects as well as the use of devices
- ♦ Master the antiarrhythmic pharmacology
- ♦ Distinguish the different types of supraventricular tachycardias
- ♦ Master the correct handling of the defibrillation test

### Module 7. Interventionalism in Congenital Heart Disease

- ♦ Understand the terminology and principles of surgery for congenital heart disease and the immediate care that must be given during the patient's stay in the ICU
- ♦ Master the valvuloplasty technique
- ♦ Study rotational angiography and new imaging techniques in adolescent and adult congenital heart disease
- ♦ Delve into the treatment of pulmonary arteries in congenital heart disease

### Module 8. Transition and Congenital Heart Disease in Adults

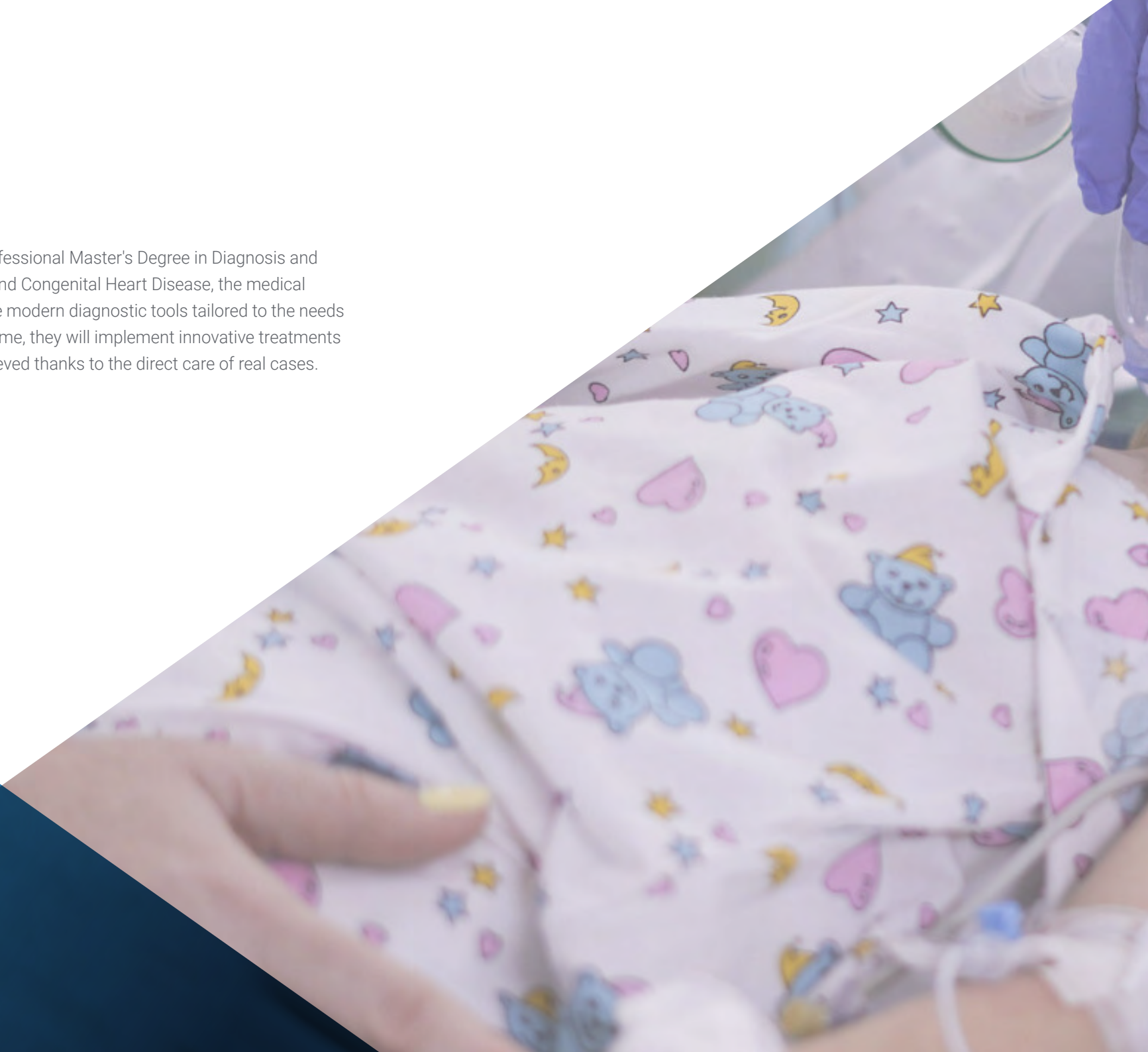
- ♦ Gain in-depth understanding of the transition of patients from pediatric to adult age, focusing especially on the new problems which they could face
- ♦ Analyze the patient with single ventricle
- ♦ Master the types of arrhythmias, conduction disturbances and electrophysiological abnormalities in adults with congenital heart disease
- ♦ Delve into follow-up protocols

### Module 9. Surgery, Anesthesia and Intensive Care of Congenital Heart Diseases

- ♦ Master the surgical techniques of septal defects and rings
- ♦ Management of postoperative anesthetics
- ♦ Analysis of cardiac tamponade
- ♦ Distinguish the different types of coronary abnormalities

# 04 Skills

Upon completion of this Hybrid Professional Master's Degree in Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease, the medical professional will select and manage modern diagnostic tools tailored to the needs of each clinical case. At the same time, they will implement innovative treatments whose mastery will have been achieved thanks to the direct care of real cases.







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*Enroll now and you will delve into the main diagnostic techniques and therapeutic aspects that solve health problems in child patients with severe heart disease”*



## General Skills

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- ♦ 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 and the ultimate knowledge and rationale behind them to specialized and non-specialized audiences in a clear and unambiguous manner
- ♦ Develop the learning skills that will enable them to continue studying in a largely self-directed or autonomous manner





## Specific Skills

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- ♦ Define the essential concepts which motivate the student to design and perform their own clinical studies and to take a critical stance when addressing the bibliography of information available
- ♦ Explain the uniqueness of normal and pathologic fetal circulation in order to address the problems with the diagnostic tools available today, as well as to guide the case and the family
- ♦ Acquire knowledge of the non-invasive diagnostic methods used in the diagnosis and prognosis of lesions in this stage of life
- ♦ Update on cardiac arrhythmias and interventionism, which represents a new scenario for the management of these patients
- ♦ Understand that the focus of this pathology in these patients must be multidisciplinary



*Incorporate into your clinical and interventional practice the highest level of competencies in the approach to congenital heart disease through this innovative degree"*

05

# Course Management

In this Hybrid Professional Master's Degree, TECH has brought together the best experts in the field of Pediatric Cardiology and Congenital Heart Disease. The faculty has an extensive medical background and, at the same time, they keep up to date with the latest innovations in this clinical and interventional field. Based on this constant updating, the teachers have developed a very complete program that enhances the assimilation of complex concepts, as well as will allow you to understand the operation and scope of new therapeutic and diagnostic tools.





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*The most important novelties in Pediatric Cardiology are part of this program, designed by the best teachers at TECH”*

## Management



### Dr. Gutiérrez Larraya, Federico

- ♦ Head of the Pediatric Cardiology at Ruber International Hospital Madrid, Spain
- ♦ Associate Professor of Medicine at the Complutense University of Madrid.
- ♦ PhD in Medicine from Complutense University of Madrid.
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid
- ♦ Resident in Pediatric and Interventional Cardiology at the Children's Hospital of The King's Daughters. Virginia, United States
- ♦ Master's Degree in Health Management and Economics from the European Institute of Health and Social Welfare.
- ♦ Executive Master's Degree in Healthcare Organization Management by ESADE
- ♦ Chairman of the Permanent Management Committee of the Children's Hospital La Paz University Hospital. Madrid, Spain



### Dr. Merino Llorens, Jose Luis

- ♦ Head of the Arrhythmia and Robotized Cardiac Electrophysiology Unit at La Paz University Hospital.
- ♦ Cardiologist and electrophysiologist at university Ruber Juan Bravo Hospital
- ♦ Cardiologist and electrophysiologist at Nisa Pardo de Aravaca Hospital
- ♦ Principal investigator in several international multicenter studies
- ♦ Author of hundreds of scientific articles on his medical specialty
- ♦ President of the Electrophysiology and Arrhythmias Department of the Spanish Society of Cardiology
- ♦ Chairman of the Cardiac Rhythm Committee of the European Society of Cardiology
- ♦ PhD in Medicine from the Complutense University of Madrid.
- ♦ Professional Master's Degree in Healthcare Unit Management by ESADE
- ♦ Award for the best scientific communication on Arrhythmias and Electrophysiology at the Congress on Cardiovascular Diseases

## Professors

### Dr. Sobrino Baladrón, Adolfo

- ♦ Medical Specialist in Pediatric Cardiology at Pediatric University Jesús Hospital
- ♦ Medical Specialist in Pediatric Cardiology at the Congenital Cardiopathies Unit at from Madrid Hospitals
- ♦ Attending Physician. Infant in Cardiology at the Gregorio Marañón General University Hospital
- ♦ Doctor Specialist in Pediatric Cardiology at the Infanta Cristina University Hospital
- ♦ Specialist in Pediatrics at the Alcorcón Foundation University Hospital
- ♦ Degree in Medicine from the University of Navarra

### Dr. Ávila Alonso, Pablo

- ♦ Cardiology Specialist in the Recoletas Campo Grande Hospital Network
- ♦ Specialist in Cardiology at the San Rafael University Hospital, CECAM Group
- ♦ Doctor at the General University Hospital Gregorio Marañón
- ♦ Member of: Spanish Society of Pediatric Cardiology

### Dr. Campuzano Larrea, Oscar

- ♦ Expert researcher in Cardiovascular Genetics
- ♦ Senior Researcher at the Cardiovascular Genetics Center of the Josep Trueta Biomedical Research Institute of Girona (IDIBGI)
- ♦ Teacher in university studies
- ♦ PhD in Biology from the Autonomous University of Barcelona
- ♦ Degree in Biology from the University of Barcelona
- ♦ Master's Degree in Neurosciences from the Autonomous University of Barcelona

### Dr. García Ormazábal, Itziar

- ♦ Physician at the Cardiology Department Quirónsalud Madrid University Hospital
- ♦ Resident Intern in Cardiology Castilla-La Mancha Health Service (SESCAM)
- ♦ Degree in Medicine from the Autonomous University Madrid
- ♦ Cardiology Physician
- ♦ Fellowship La Paz University Hospital

### Dr. Castro Parga, Luis Elías

- ♦ Anesthesiologist in the Anesthesia and Critical Care Service of the Children's Pain Unit at La Paz Children's Hospital
- ♦ Anesthesiologist at the University Hospital HM Sanchinarro
- ♦ Head of the Adult Critical Care Unit created in the operating rooms of the Hospital Universitario La Paz
- ♦ Co-author of the book Transfunctional Medicine
- ♦ Medical Degree

### Dr. Jerez Mata, Ángel Luis

- ♦ Anesthesiologist at the HM Montepíncipe Hospital
- ♦ Area Specialist in the Pediatric Anesthesiology and Resuscitation Service at the Hospital Universitario 12 de Octubre
- ♦ Teacher at the Complutense University of Madrid
- ♦ Medical Degree

**Dr. Sanabria Carretero, Pascual**

- ♦ Specialist in Pediatric Anaesthesiology
- ♦ Responsible for Pediatric Anesthesia, Quirónsalud Sur Hospital and Quirónsalud San José Hospital
- ♦ Assistant Physician, Anesthesia and Critical and Surgical Care Service, La Paz Children's Hospital
- ♦ Specialised doctor in Anesthesiology, Resuscitation and Pain Treatment at the University Hospital La Paz
- ♦ Degree in Medicine and Surgery from the University of Salamanca

**Dr. Aguilar Jiménez, Juan Miguel**

- ♦ Cardiology Physician
- ♦ Assistant Physician at the Cardiology Department of the 12 de Octubre University Hospital
- ♦ Researcher at the Murcian Institute of Biosanitary Research
- ♦ Author of several scientific publications on Cardiology

**Dr. Gonzalez Rocafort, Alvaro**

- ♦ Head of Congenital Heart Surgery at HM Montepríncipe University Hospital
- ♦ Congenital Cardiopathies Surgeon at the Insular University Hospital Complex Maternal and Infant Hospital of Gran Canaria
- ♦ Congenital Heart Disease Surgeon at La Paz University Hospital
- ♦ Specialist Physician in San Carlos Clinical Hospital
- ♦ Surgical Coordinator of Cardiac Transplantation at La Paz Hospital
- ♦ PhD in Medicine from the Complutense University of Madrid
- ♦ Master's Degree in Health Management by UDIMA
- ♦ Member of: European Association of Cardiothoracic Surgery, European Association of Congenital Heart Surgery, Spanish Society of Cardiovascular Surgery, Spanish Society of Pediatric Cardiology and Congenital Heart Disease

**Dr. García Torres, Enrique**

- ♦ Pediatric Cardiology Specialist
- ♦ Pediatric Cardiologist Surgeon at the 12 de Octubre University Hospital
- ♦ Training as Pediatric Surgeon at Marie Lannelongue Surgical Center
- ♦ Master's Degree in Cardiovascular Surgery from the University of Carabobo
- ♦ Degree in Medicine and Surgery from the Central University of Venezuela

**Dr. Sarria García, Esteban**

- ♦ Specialist in Cardiovascular Surgery in the Maternal and Infant Area of the Carlos Haya Regional University Hospital
- ♦ Graduate in Medicine and Surgery from the University of Malaga
- ♦ Specialist in Cardiovascular Surgery (MIR) Carlos Haya Hospital, Málaga

**Dr. Serrano Martínez, Felix**

- ♦ Assistant Physician of the Toledo Hospital Complex
- ♦ Degree in Medicine and Surgery from the Ministry of Education and Science at the University of Valencia
- ♦ Specialist in General Surgery and Digestive System at the University Hospital Dr. Peset
- ♦ Doctor in Medicine and Surgery by the Ministry of Education and Science at the University of Valencia

**Dr. Sanchez, Raul**

- ♦ Children's Cardiac Surgeon specializing in Congenital Heart Disease
- ♦ Pediatric Cardiac Surgeon and Congenital Cardiopathies at Hospital Universitario La Paz
- ♦ Pediatric Cardiac Surgeon at Hospital Universitario Ramón y Cajal
- ♦ Doctorate in Medicine from the Autonomous University Madrid
- ♦ Degree in Medicine from the University of Murcia



**Dr. Centella Hernández, Tomasa**

- ♦ Cardiovascular Surgeon expert in Congenital Cardiopathies
- ♦ Cardiovascular Surgeon at the university Ramón y Cajal Hospital
- ♦ Cardiovascular Surgeon at Universitario de La Princesa
- ♦ Vice-President of the Delegated Commission of Surgical and Medical-Surgical Specialties of the Ministry of Health, Consumption and Social Welfare
- ♦ President of the Spanish Society of Thoracic-Cardiovascular Surgery
- ♦ Project Coordinator of the International Cooperation for the Surgery of Congenital Heart Disease
- ♦ Medicine and Surgery Doctor from the University of Alcalá
- ♦ Master's Degree in Minimal Access Cardiovascular Surgery

**Dr. Ruiz Alonso, Enrique**

- ♦ Pediatrician Specializing in Pediatric Cardiac Surgery
- ♦ Chief of the Pediatric Cardiovascular Surgery Section at the Maternal and Child Hospital of Malaga
- ♦ Pediatric Surgeon in the Madrid Health Service
- ♦ Attending Physician at the Royal Children's Hospital. Melbourne, Australia
- ♦ Master's Degree in Health Organization Management from ESADE
- ♦ Master's Degree in Hospital and Health Services Management from the Polytechnic University of Valencia

**Dr. Abelleira, César**

- ♦ Specialist in Pediatrics and Specific Areas at the University Hospital of A Coruña
- ♦ Specialist in Pediatric Cardiology and Congenital Heart Disease at Ramón y Cajal Hospital
- ♦ Pediatric Cardiologist in the Congenital Heart Disease Unit of the Montepíncipe Hospital
- ♦ Specialization in Hemodynamics and Interventional Cardiology in Pediatric Cardiology and Congenital Heart Disease
- ♦ Member of the Board of Directors of the Society of Pediatric Cardiology and Congenital Cardiopathies

**Dr. Villagrà Blanco, Fernando**

- ♦ Head of Congenital Cardiopathies Unit
- ♦ Head of Children's Cardiac Surgery Service at HM Montepíncipe University Hospital
- ♦ Head of Children's Cardiac Surgery at the Canary Islands Health Service
- ♦ Chief of Children's Cardiovascular Surgery Service at the Hospital Universitario La Paz
- ♦ Chief of Children's Cardiac Surgery Service at the Hospital Universitario La Zarzuela
- ♦ Adjunct Children's Cardiac Surgeon at the Ramón y Cajal University Hospital
- ♦ Degree in Medicine and Surgery
- ♦ Educational Commission for Foreign Medical Graduates (ECFMG) to practice medicine in the U.S
- ♦ Doctoral thesis with Outstanding Cum Laude from the Autonomous University of Madrid
- ♦ Specialist in Cardiovascular Surgery via MIR by the University Hospital Puerta de Hierro Majadahonda and La University of Connecticut
- ♦ Expert in the field of Surgical Block assigned to the General Directorate of Health of the Ministry of Health of the Community of Madrid
- ♦ European Board of Thoracic and Cardiovascular Surgeons
- ♦ Member of: Spanish Society of Pediatric Cardiology and Congenital Heart Disease, Spanish Society of Cardiology, Spanish Society of Cardiovascular Surgery, International College of Angiology, European Society de Cardiology, Society of Paediatric Cardiovascular Surgery Aldo Castañeda, International European Society for , Cardiovascular Surgery, International Society for Heart Transplantation, Spanish Society of Pediatric Cardiology and Congenital Heart Disease

**Dr. Álvarez - Ortega, Carlos Antonio**

- ♦ Specialist in Cardiology at La Paz University Hospital
- ♦ Specialist in Electrophysiology at La Paz University Hospital
- ♦ Author of several specialized publications
- ♦ Doctor of Medicine, University of Seville

#### **Dr. Rodríguez Ogando, Alejandro**

- ♦ Physician of the Pediatric Cardiology and Congenital Heart Disease Unit at HM Montepríncipe Hospital
- ♦ Assistant Physician at the Hospital General Universitario Gregorio Marañón
- ♦ Graduate in Medicine and Surgery from the Universidad de Navarra
- ♦ PhD in Biomedical Sciences from the Universidad Autónoma de Madrid
- ♦ Specialist in Pediatrics, Hospital General Universitario Gregorio Marañón
- ♦ Diploma in Research Methodology from the Autonomous University of Barcelona
- ♦ Member of: Spanish Society of Pediatric Cardiology and Congenital Heart Diseases, Coordinator of the Spanish Registry of Pediatric Pulmonary Hypertension, European Association of Pediatric Cardiology

#### **Dr. García Hernández, Irene**

- ♦ Pediatrician expert in Pediatric Cardiology and Congenital Cardiopathies
- ♦ Assistant Physician of the Pediatrics Service of the University Hospital Complex of A Coruña
- ♦ Physician in the Arrhythmia Unit of the Pediatric Cardiology Service of the university Ramón y Cajal Hospital
- ♦ Assistant Physician of Pediatrics and Infant Cardiology at Marqués Marqués de Valdecilla University Hospital
- ♦ Physician at the Central University Hospital of Asturias
- ♦ Doctor in Medicine and Surgery, University of Oviedo

#### **Dr. García Guereta, Luis**

- ♦ Specialist in Pediatric Cardiology
- ♦ Head of the Pediatric Cardiology Section at La Paz University Hospital
- ♦ Physician in the Pediatric Cardiology Service of La Paz University Hospital
- ♦ Author of numerous scientific publications

#### **Dr. Centeno Jiménez, Miriam**

- ♦ Specialist in Pediatric Cardiology and Cardiac Electrophysiology
- ♦ Assistant Physician in Pediatric Cardiology at the Hospital General Universitario Gregorio Marañón
- ♦ Assistant Physician in Pediatric Cardiology at the University Hospital of Fuenlabrada
- ♦ Assistant Physician in Pediatric Cardiology at Hospital Universitario La Paz
- ♦ Assistant Physician in Pediatrics and Pediatric Cardiology at Hospital Universitario Severo Ochoa
- ♦ Degree in Medicine from the Autonomous University Madrid
- ♦ Professional Master's Degree in Cardiac Electrophysiology from the Complutense University of Madrid

#### **Dr. Balbacid Domingo, Enrique José**

- ♦ Head of the Pediatric Cardiology Service of Sanitas at Hospital Universitario La Moraleja and Hospital Universitario La Zarzuela
- ♦ Assistant Physician of the Adult Congenital Heart Disease Unit at the Hospital Universitario La Paz
- ♦ Specialist in Cardiology at the Cardiacs Clinical Center
- ♦ Assistant Physician in Pediatric Hemodynamics at the Hospital Universitario La Paz
- ♦ Physician in charge of Children's Cardiology at the Recoletas Campo Grande Hospital, Recoletas Group. Valladolid
- ♦ Reviewer of the Spanish Journal of Cardiology
- ♦ Professor of postgraduate programs related to his specialty
- ♦ Doctorate in Medicine from the Autonomous University Madrid
- ♦ Degree in Medicine, University of Alcalá
- ♦ Specialist Physician In Cardiology in San Carlos Clinical Hospital. Madrid
- ♦ Professional Master's Degree in Infant Cardiology from the Autonomous University of Madrid Member: Working Group of Hemodynamics, Spanish Society of Pediatric Cardiology and Congenital Heart Disease

**Dr. Ortega Molina, Marta**

- ♦ Cardiologist in the Arrhythmia Unit at the La Paz Children's Hospital
- ♦ Specialist in Pediatric Cardiology in the Congenital Heart Disease Unit at HM Montepríncipe Hospital
- ♦ Specialist in Pediatric Cardiology at the Hospital Universitario de Móstoles
- ♦ Specialist in Pediatric Cardiology at Hospital Quirónsalud San José
- ♦ Degree in Medicine and Surgery from the Autonomous University of Madrid
- ♦ Specialty in Pediatric Cardiology at the 12 de Octubre University Hospital
- ♦ Master's Degree in Cardiac Electrophysiology from CEU San Pablo University
- ♦ Research Fellow in Pediatric Electrophysiology and Congenital Cardiopathology at Children's Hospital Boston (London) London

**Dr. Ortigado Matamala, Alfonso**

- ♦ Head of the Pediatrics Department at the University Hospital of Guadalajara
- ♦ Pediatrician at Guadalajara University Hospital
- ♦ Professor of Pediatric Cardiology at the Alcalá University
- ♦ Doctor of Medicine and Surgery from the University of Alcalá
- ♦ Degree in Medicine and Surgery from the University of Alcalá de Henares
- ♦ Specialty in Pediatrics and its Specific Areas by the Autonomous University of Madrid
- ♦ Master's Degree in University Teaching, Teacher Training and Development of Teaching Innovation from the University of Alcalá
- ♦ Master's Degree in Clinical Management, Medical and Healthcare Management, CEU Cardenal Herrera University
- ♦ Accreditation in Pediatric Cardiology and Congenital Heart Disease by the Spanish Society of Cardiology (SEC)
- ♦ Member: Spanish Society of Cardiology (SEC)

**Dr. Pérez Moneo Agapito, María Ángeles**

- ♦ Pediatrician.
- ♦ Co-author of the study Postnatal ischemic cerebrovascular disease in the pediatric emergency department
- ♦ Co-author of the AMIR Manual on Pediatric Nursing

**Dr. Galindo Izquierdo, Alberto**

- ♦ Head of the Gynecology and Obstetrics Department at the Hospital Universitario 12 Octubre
- ♦ Specialist Physician of the Gynecology and Obstetrics Service at the Hospital Universitario 12 Octubre
- ♦ Researcher of the Foundation for Biomedical Research at the Hospital Universitario 12 de Octubre
- ♦ Professor of Obstetrics and Gynecology at the Complutense University of Madrid
- ♦ PhD in Obstetrics and Gynecology at the Complutense University of Madrid
- ♦ Degree in Medicine and Surgery

**Dr. Mendoza Soto, Alberto**

- ♦ Specialty in Pediatric Cardiology at the 12 de Octubre in Hospital
- ♦ Acting Head of the Pediatric Cardiology Service at the 12 Octubre University Hospital
- ♦ Head of Hemodynamics of Pediatric Cardiology at 12 de Octubre University Hospital
- ♦ Cardiologist in the Pediatric Cardiology and Cardiac Surgery Unit of HM Hospitales
- ♦ Author of numerous scientific articles published in journals
- ♦ Member: Spanish Society of Pediatric Cardiology and Congenital Heart Disease (SECPC)

**Dr. Gómez Martín, Felipe**

- ♦ Pediatrician expert in Pediatric Cardiology
- ♦ Assistant Physician in Pediatric at Hospital Universitario La Paz

**Dr. Fernández Miranda, María de la Calle**

- ♦ Physician in the Obstetrics and Gynecology Unit at the Ruber Internacional Hospital
- ♦ Head of Department of High Risk Obstetrics and Medical Obstetrics. La Paz University Hospital
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid
- ♦ PhD in Gynecology Obstetrics from the Autonomous University of Madrid

**Dr. Deiros Bronte, Lucía**

- ♦ Pediatric and Fetal Cardiologist at La Paz University Hospital
- ♦ Author of several articles published in scientific journals
- ♦ Teacher in university studies
- ♦ Doctorate in Medicine from the Autonomous University Madrid

**Dr. Rodríguez González, Roberto**

- ♦ Head of Section of the Ultrasound and Fetal Medicine Department, La Paz University Hospital
- ♦ Specialist in Obstetrics and Gynecology at La Paz University Hospital
- ♦ Attending Physician at La Paz Infantil Hospital
- ♦ Expert in Fetal Medicine

**Dr. Uceda Galiano, Ángela**

- ♦ Pediatric and Fetal Cardiologist at La Paz University Hospital
- ♦ Author of numerous scientific publications
- ♦ Doctorate in Medicine from the Autonomous University Madrid

**Dr. Mansilla Aparicio, Elena**

- ♦ Specialist Physician in charge of the Cytogenetics Unit of la Paz University Hospital
- ♦ Specialist Physician in the Cytogenetics Section of the Institute of Medical and Molecular Genetics
- ♦ Degree in Medicine



**Dr. Moreno Galdó, Antonio**

- ♦ Head of Section of the Allergy, Pediatric Pneumology and Cystic Fibrosis Units at Vall d'Hebron University Hospital
- ♦ Head of the Pediatric Lung Transplant Program at Vall d'Hebron University Hospital
- ♦ Assistant Physician of the Pediatrics Department at Vall d'Hebron University Hospital
- ♦ Assistant Physician of the Pediatrics Service at the Son Dureta Hospital
- ♦ Researcher specialized in Pediatrics
- ♦ Author of numerous scientific articles on his specialty
- ♦ Teacher in university studies of Medicine
- ♦ Doctor of Medicine, Autonomous University of Barcelona

**Dr. Labrandero de Lera, Carlos**

- ♦ Specialist in Pediatric Cardiology
- ♦ Pediatric Cardiology, La Paz University Hospital
- ♦ Pediatric Cardiologist in the Congenital Heart Disease Unit at HM Montepíncipe Hospital
- ♦ Pediatric Cardiologist at the Maternal and Children's Clinics of Madrid.
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid
- ♦ Specialist in Pediatrics and Specific Areas at the University Hospital La Paz
- ♦ International Master in Pulmonary Hypertension, Universidad Internacional Menéndez Pelayo
- ♦ Professional Master's in Pediatric Cardiology, Universidad Autónoma de Madrid.
- ♦ Member of: Spanish Society of Pediatric Cardiology and Congenital Heart Disease (SECPCC)

**Dr. Siles, Ana**

- ♦ Specialist in Pediatric Cardiology at the Hospital Universitario Puerta de Hierro Majadahonda
- ♦ Collaborator and teacher in Pediatrics at the Universidad Autónoma de Madrid
- ♦ Member of the Perinatal Commission at the Hospital Universitario Puerta de Hierro Majadahonda
- ♦ Degree in Medicine and Surgery from the Autonomous University of Madrid
- ♦ Specialty in Pediatrics at the Severo Ochoa University Hospital
- ♦ Specialty in Pediatric Cardiology at the Gregorio Marañón MaternalChildren's Hospital
- ♦ Fellowship in Pediatric Cardiology at Sainte Justine Hospital Center
- ♦ Research Proficiency in Pediatrics, Autonomous University of Madrid
- ♦ Member of: SECPCC, AEP I

**Dr. Del Cerro Marín, María Jesús**

- ♦ Head of the Pediatric Cardiology Department, Ramón y Cajal University Hospital. Madrid
- ♦ Head of the Pediatric Pulmonary Hypertension and Congenital Heart Disease Unit at the Ramón y Cajal University Hospital
- ♦ Teaching in private and public academic institutions Doctor of Medicine
- ♦ Degree in Medicine and Surgery from the Autonomous University of Madrid
- ♦ President of the Working Group on Pulmonary Circulation of the Spanish Society of Diseases
- ♦ Pediatric Cardiology and Congenital Cardiopathies
- ♦ CoCoordinator of the Spanish Registry of Patients with Pediatric Pulmonary Hypertension (REHIPED)
- ♦ Co-leader of the Pediatric Taskforce of the Pulmonary Vascular Research Institute (PVRI)

**Dr. Villagr Albert, Sandra**

- ♦ Children's Cardiologist and Head of the Congenital Heart Disease Unit
- ♦ Head of the Congenital Cardiopathies Unit at HM Hospitals
- ♦ Cardiologist at HM Monteprncipe University Hospital
- ♦ Pediatric Cardiology, including cardiac transplantation and ventricular assistance, and fetal cardiology at the Hospital Universitario de La Paz
- ♦ Pediatric Cardiology and Adult Congenital Heart Disease at the Ramn y Cajal University Hospital
- ♦ Pediatric Cardiology, fetal and familial cardiomyopathies at the University Hospital of Puerta Hierro Majadahonda
- ♦ Pediatric Cardiology at the University Hospital of Getafe
- ♦ Pediatric Cardiology at the 12 de Octubre University Hospital
- ♦ University collaborating professor
- ♦ pH D in Medicine and Surgery Cum Laude from the Autonomous University of Madrid
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid
- ♦ Member of: Spanish Society of Pediatrics, Spanish Society of , Pediatric Cardiology and Congenital Heart Disease, Society of Pediatrics of Asturias, Cantabria and Castilla y Len

**Dr. Maiques Magraner, Elena**

- ♦ Specialist in Pediatrics expert in Pediatric Cardiology
- ♦ Specialist in Pediatrics at La Salud Hospital
- ♦ Author of several scientific publications on Pediatric Cardiology
- ♦ Teacher in medical training courses
- ♦ Professional Master's Degree in Pediatric Cardiology, Universidad Autnoma de Madrid I

**Dr. Usano Carrasco, Ana**

- ♦ Head of the Children's Cardiology Clinic at the La Moraleja University Hospital
- ♦ Area Specialist in Children's Cardiology at the Infanta Leonor University Hospital
- ♦ Area Specialist in Infant Cardiology at the Puerta de Hierro University Hospital Majadahonda
- ♦ Area Specialist in Pediatric Cardiology at the General: University Hospital of Albacete
- ♦ Author of scientific articles on her specialty
- ♦ Lecturer in postgraduate studies in Medicine
- ♦ Professional Master's Degree in Diagnosis and Treatment in Pediatric Cardiology and Congenital Cardiopathies from CEU Cardenal Herrera University
- ♦ Postgraduate Diploma in Fetal and Pediatric Cardiophysiology from CEU Cardenal Herrera University

**Dr. Rivero Jimenez, Natalia**

- ♦ Medical Specialist in Pediatric Cardiology and Congenital Heart Disease
- ♦ Medical Specialist in Pediatric Cardiology and Adult Congenital Heart Disease at the Hospital Universitario Ramn y Cajal
- ♦ Author of several national and international specialized publications
- ♦ Member of: Spanish Society of Pediatric Cardiology and Congenital Heart Disease (SECPCC)

**Dr. Correseria Sanchez, Jose Felix**

- ♦ Specialist in Cardiology and Child Hemodynamics
- ♦ FEA in Pediatric Cardiology and Pediatric Hemodynamics at the Hospital Universitario Virgen del Roco. Seville
- ♦ Member of: Editorial Board of the Spanish Journal of Cardiology

**Dr. Sanz Pascual, Elena**

- ◆ Specialist in Pediatric Cardiology
- ◆ Pediatric Specialist at La Paz Children's Hospital.
- ◆ Degree in Medicine from the Universidad Autónoma de Madrid I

**Dr. Arreo Del Val, Viviana**

- ◆ Pediatric Cardiology at La Paz University Hospital
- ◆ Pediatric Cardiologist in Congenital Heart Disease La Unit, HM Montepríncipe University Hospital
- ◆ Director of the Editorial Academy of MIR Studies
- ◆ Collaborating Professor in the Faculty of Medicine at the CEU San Pablo University
- ◆ Coordinator and Professor of the Master in Diagnosis and Treatment in Pediatric and Cardiology and Congenital Heart Disease at CEU San Pablo University
- ◆ Degree in Medicine and Surgery from the Autonomous University of Madrid
- ◆ Professional Master's in Pediatric Cardiology, Universidad Autónoma de Madrid
- ◆ Member of: Spanish Society of Pediatric Cardiology and Congenital Heart Disease (SECPC)

**Dr. Ferrer, Queralt**

- ◆ Assistant Physician of the Cardiology Pediatrics Department at Vall d'Hebron Hospital
- ◆ Specialist in Pediatric and Fetal Cardiology at Dexeus University Hospital
- ◆ Specialist in Pediatrics and Pediatric Cardiology
- ◆ Member of: Fetal Cardiology Working Group of the European Society of Pediatric Cardiology, Fetal Cardiology Working Group of the Spanish Society of Pediatric Cardiology

**Dr. Antolín Alvarado, Eugenia**

- ◆ Specialist in Maternal Fetal Medicine and Surgery
- ◆ Head of the Ultrasound and Fetal Medicine Section of the Obstetrics and Gynecology Department at the Hospital Universitario La Paz
- ◆ Attending Physician at La Paz University Hospital

**Dr. Vera Puente, Francisco**

- ◆ Faculty Specialist Area in Cardiovascular Surgery, Maternal and Children's Hospital, Málaga

**Dr. Romero Layos, Manuel**

- ◆ Specialist. Anesthesia and resuscitation. 12 de Octubre University Hospital
- ◆ Tutor of the Anesthesiology and Resuscitation Teaching Protocol. 12 de Octubre Hospital
- ◆ Specialist in Cardiovascular Surgery HM Montepríncipe University Hospital



*All TECH faculty members have extensive experience in the field of pediatric cardiology and are up to date with the latest surgical and non-invasive therapeutic methods in this field of medicine"*

# 06

## Educational Plan

The syllabus of this Hybrid Professional Master's Degree is composed of several academic modules. Thus, the pediatric cardiologist will update their knowledge about cardiac anatomy, cardiovascular pathophysiology and other structural and functional elements of the heart. It also will delve into the most recent aspects of fetal cardiology and intrauterine procedures that can be performed to treat congenital heart disease. At the same time, it delves into the main tools of non-invasive cardiac imaging and functional tests to check the efficiency of the organ in different types of patients.





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*This Hybrid Professional Master's Degree, in its theoretical phase, has several multimedia resources, such as videos and infographics, to consolidate your knowledge in a fast and flexible way"*

### Module 1. Update in Pediatric Cardiology

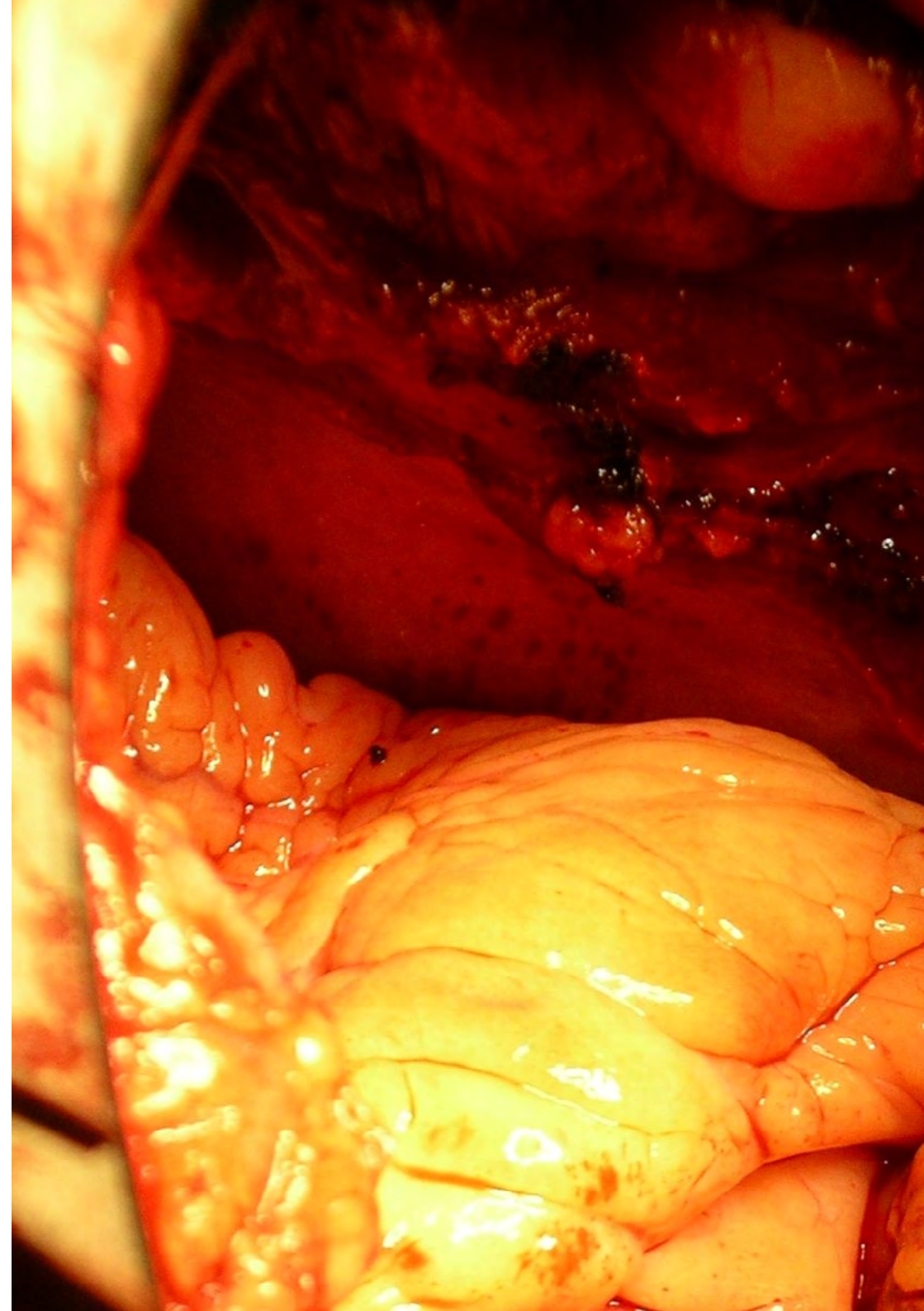
- 1.1. Epidemiology, Incidence and Prevalence, Terminology, Etiology of Congenital Heart Disease
- 1.2. Genetic Principles and Congenital Heart Disease
- 1.3. Cardiac Embryology and Cardiac Anatomy
  - 1.3.1. Cardiac Anatomy: Elena Sanz
  - 1.3.2. Cardiac Embryology: Natalia Rivero
- 1.4. Cardiovascular Pathophysiology, Diagnosis, Support Techniques
- 1.5. Pediatric Heart Failure and Transplantation
- 1.6. Nutrition and Development in Breastfeeding Infants and Children with Congenital Heart Disease
- 1.7. General Aspects in the Management of Heart Disease, both Congenital and Acquired I

### Module 2. Pulmonary Hypertension

- 2.1. Pediatric Pulmonary Hypertension: Epidemiology, Classification and Clinical Process
- 2.2. Diagnostic Protocol for Pediatric PHT Assessment of Functional Grade
- 2.3. Cardiac Catheterization in Pulmonary Hypertension Percutaneous Treatment
- 2.4. Specific Conventional Pharmacological Treatment of Pharmacological Treatment
- 2.5. Surgical Treatment of PHT Potts Shunt Lung Transplant

### Module 3. Non-Invasive Cardiac Imaging and Functional Tests

- 3.1. General Basis of an Echocardiography Equipment
- 3.2. Transthoracic and Transesophageal Echocardiography
- 3.3. Cardiac CAT Scan
- 3.4. Magnetic Resonance
- 3.5. Functional Tests



#### Module 4. Fetal Cardiology

- 4.1. Physiology of Fetal Circulation and Normal Transition
- 4.2. Cardiocerebral Development
- 4.3. Genetics
- 4.4. Prenatal Screening Indications for Fetal Echocardiograph
- 4.5. Acute Heart Failure
- 4.6. Heart Malformations
  - 4.6.1. Septal Defects
  - 4.6.2. Conotruncal Defects
  - 4.6.3. Right and Left Heart Failure
  - 4.6.4. Coarctation of Aorta
- 4.7. Fetal Arrhythmias
- 4.8. Preparation of Birth and Perinatal Management
  - 4.8.1. Obstetric Management
  - 4.8.2. Management of the New-born
- 4.9. Fetal Interventionism

#### Module 5. Heart Disease, Cardiomyopathies, Tumors

- 5.1. Congenital Heart Disease
  - 5.5.1. Introduction
  - 5.5.2. Non-Cyanogenic Heart Disease
  - 5.5.3. Cyanogenic Heart Disease
- 5.2. Myocarditis and Cardiomyopathy
- 5.3. Pericarditis, Endocarditis and Kawasaki Disease
- 5.4. Cardiologic Involvement in Pediatric Systemic Diseases

## Module 6. General Basis of Arrhythmias in Fetal and Pediatric Age Group

- 6.1. General Bases: Cellular and Cardiac Electrophysiology
  - 6.1.2. Anatomy and Embryology of the Conduction System
  - 6.1.3. Normal and Pathological ECG
  - 6.1.4. Changes During Development
  - 6.1.5. The Normal Patient With a Structurally Abnormal Heart
- 6.2. Canalopathies
- 6.3. Genetics of Arrhythmic Disorders
- 6.4. Preexcitation Clinical Management
- 6.5. Supraventricular Tachycardias I (AV reentry and intranodal)
- 6.6. Supraventricular Tachycardias II (focal atrial, reentrant and atrial fibrillation)
- 6.7. Ventricular Tachycardias
- 6.8. Bradycardias and Blockages
- 6.9. Invasive EPS, Endocavitary Recordings Equipment: Electroanatomical Mapping, RF Ablation, Cryoablation
- 6.10. Syncope and Sudden Death
- 6.11. Antiarrhythmic Pharmacology
- 6.12. Perioperative Arrhythmias
- 6.13. Temporary and Definitive Stimulation
- 6.14. IAD Defibrillation Test

## Module 7. Interventionalism in Congenital Heart Disease

- 7.1. Basic Hemodynamic Concepts
- 7.2. Fluoroscopy and Angiography
- 7.3. Vascular Access
  - 7.3.1. Conventional Vascular Access
  - 7.3.2. Alternative Vascular Accesses (Carotid, Axillary and Transhepatic Dissection)
- 7.4. Valvuloplasty Using the Balloon in All 4 Valves
- 7.5. Valve Prosthesis. Transcatheter Therapy of Congenital Heart Disease
- 7.6. Aortic Arch Pathology
- 7.7. Treatment of Pulmonary Arteries in Congenital Heart Disease



- 7.8. Intracardiac Short Circuits
- 7.9. Techniques for Increasing Pulmonary Flow
- 7.10. Atrioseptoplasty
- 7.11. Extracardiac Short Circuits
- 7.12. Transposition of Main Arteries
- 7.13. Univentricular Heart
- 7.14. Rotational Angiograph and New Imaging Techniques in Adolescent and Adult Congenital Heart Disease Beyond the Scopy

### Module 8. Transition and Congenital Heart Disease in Adults

- 8.1. Medical History, Anamnesis Key Points Echocardiogram Imaging Tests in CHD in Adults Diagnostic Catheter
- 8.2. Left to Right and Right to Left Short Circuits
- 8.3. Patients with a Single Ventricle
- 8.4. Post-Surgery Without Complications
- 8.5. Arrhythmias, Conduction Disturbances and Electrophysiological Abnormalities in Adults with Congenital Heart Disease
- 8.6. Monitoring Protocols
- 8.7. Preconception Counseling

### Module 9. Surgery, Anesthesia and Intensive Care of Congenital Heart Diseases

- 9.1. Basis of Congenital Cardiac Surgery
  - 9.1.1. Introduction and History of Congenital Heart Disease
  - 9.1.2. Basis of ECLS and ECMO
  - 9.1.3. Ventricular and Transplant Care
- 9.2. Surgical Techniques on Septal Defects and Rings Updates
  - 9.2.1. ICA and IVC
  - 9.2.2. Partial Pulmonary Venous Abnormalities
  - 9.2.3. AV Channel
  - 9.2.4. AP Window *Cor Triatriatum*
  - 9.2.5. TAPVR
  - 9.2.6. Vascular Rings, DAP

- 9.3. Right Heart Surgical Techniques Updates
  - 9.3.1. TOF
  - 9.3.2. PAIVS and PAVSD
  - 9.3.3. Tricuspid Valve
  - 9.3.4. Vascular Rings, DAP: Raúl Sanchez
  - 9.3.5. RVOT and Pulmonary Valve: Félix Serrano
- 9.4. Left Heart Surgical Techniques Updates
  - 9.4.1. Aortic Valve
  - 9.4.2. Mitral Valve
  - 9.4.3. Coronary Abnormalities
- 9.5. Surgical Techniques of the Main Veins Updates
  - 9.5.1. Aorta, Coarctation of the Aorta, IAA
  - 9.5.2. TGA and Truncus
  - 9.5.3. Single Ventricle Text and Slide
- 9.6. Postoperative Anesthetic Management
  - 9.6.1. Strategies to Reduce Perioperative Neurologic Vulnerability Neurological Lesions
  - 9.6.2. Low Postoperative Expense Cardiac Dysfunction
  - 9.6.3. Renal Complications Renal Purification Techniques
  - 9.6.4. Pulmonary Complications Ventilatory Support Techniques Pulmonary from Hypertension Crisis
- 9.7. Other Complications
  - 9.7.1. Post-Operation Infections Pneumonia, Sepsis
  - 9.7.2. Infection of Surgical Wounds Mediastinitis
  - 9.7.3. Cardiac Tamponade
  - 9.7.4. Phrenic Plication and Others

07

# Clinical Internship

Like other TECH's Hybrid Professional Master's Degrees, this program has 1,500 hours of theoretical learning, in a 100% online study platform. At the end of this educational period, the doctor will complement the updating of their skills with a practical stay, first level, in health institutions of prestige and rigor.



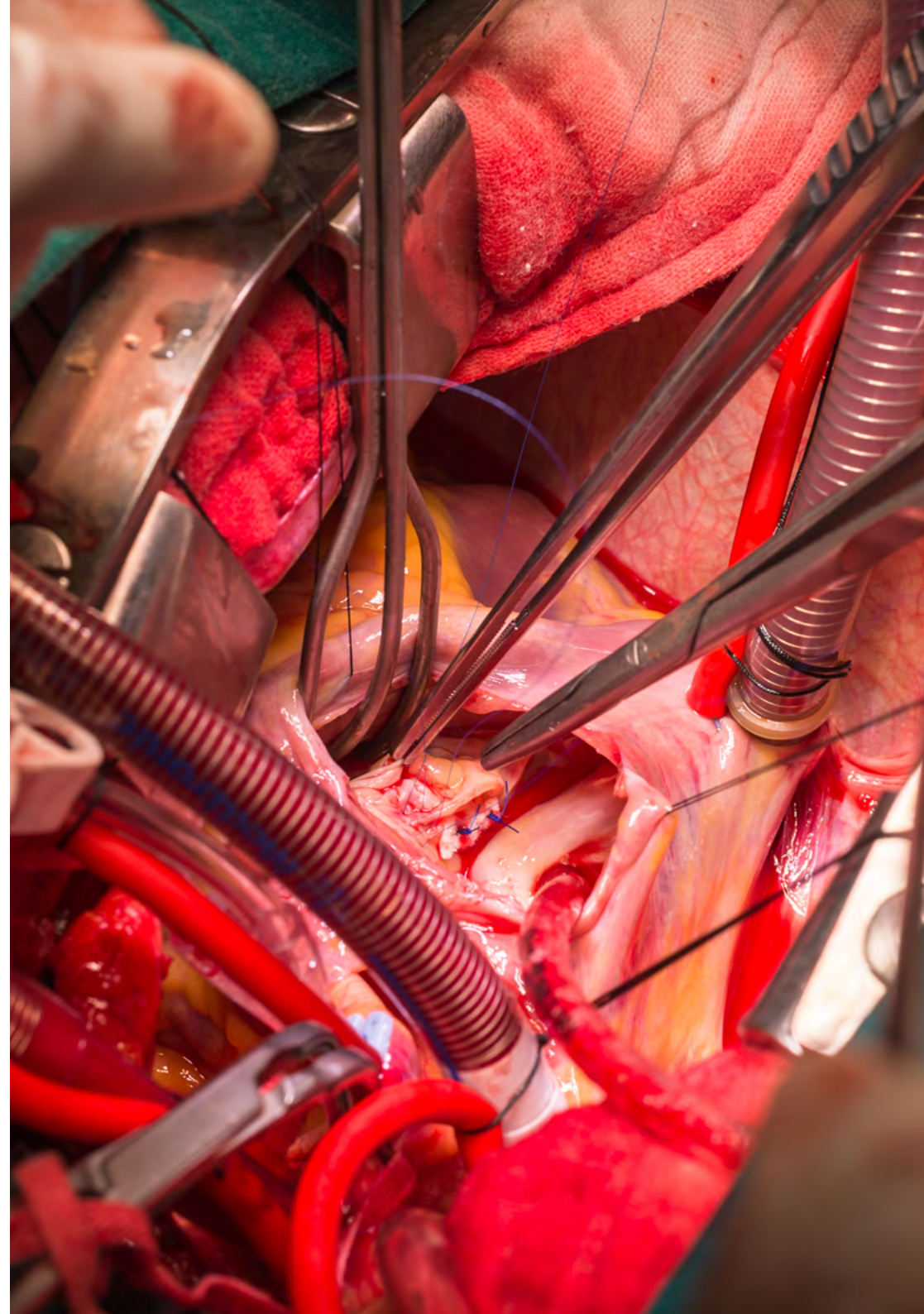
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*Develop the clinical practices of this Hybrid Professional Master's Degree in first level hospital institutions, located in different continents"*

This phase of the degree is integrated by 120 didactic hours where the hospital physician. In this space, he/she will apply the procedures and techniques assimilated in theory, but now directly and in real cases that require different procedures to determine the source of the cardiac condition or to solve it.

During this stay, totally face-to-face and intensive, the professional will complete consecutive 8-hour days, from Monday to Friday, during 3 educational weeks. Through this training, they will work closely with the best experts in the sector and will learn multiple skills through this exchange of experiences. At the same time, you will have the support of an assistant tutor who will be in charge of supervising your academic progress and will introduce you to the more complex tasks of the care unit.

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





The procedures described below will form 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 workload, with the proposed activities being as follows:

Module	Practical Activity
<b>Non-Invasive Cardiac Imaging and Functional Tests</b>	Implement transthoracic echocardiography, 2D and 3D, or Strain to study the shape, function and internal structures of the heart
	Use transesophageal echocardiography as a complementary ultrasound-based examination to other imaging procedures and functional tests
	Use cardiac CT to diagnose, monitor and plan appropriate treatments for various vascular conditions in veins and arteries
	Detect pericarditis and tumors of the heart by cardiac magnetic resonance imaging
	Apply electrocardiogram and other functional tests to record your heart's electrical activity
	Perform stress and stress tests in pediatric patients and measure their results through electrocardiographic Holter and blood pressure
<b>Interventional diagnostic techniques based on pediatric hemodynamics</b>	Extract samples from the cardiac muscle, by means of Endomyocardial Biopsy, through a peripheral vein access
	Perform Aortogram protocols, injecting a contrast substance into the aorta and taking a sequence of X-ray images
	Perform vascular diagnostic radiology tests such as Arteriography to evaluate peripheral vascular disease
	Assess coronary arteries supplying the heart using cardiac intravascular ultrasound
	Evaluate pulmonary arterial hypertension using pulmonary vascular reactivity testing

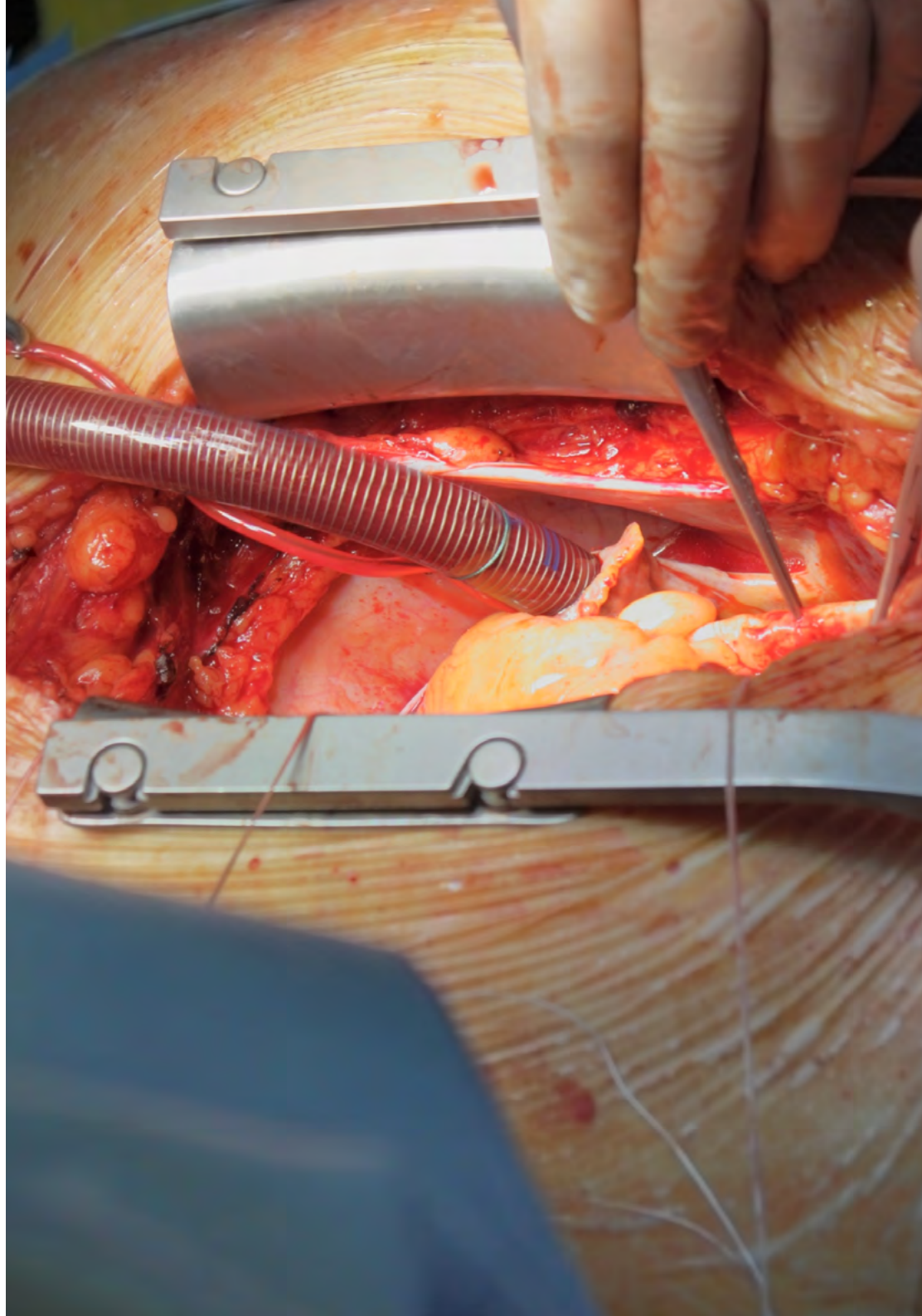
Module	Practical Activity
<b>Surgery, Anesthesia and Intensive Care of Heart Diseases</b>	Place ductal stents in newborns with severe congenital heart disease
	Perform embolization of arteriovenous fistulas
	Use radiofrequency to treat perforation of obliterated structures, and pressure guidewires to access locations unapproachable with the usual catheters
	Apply percutaneous treatments for acute and chronic pulmonary thromboembolism, Foramen Ovale, atrial septal defect, ventricular septal defect, aortic coarctation, arteriovenous fistulas, among others
	Repair aortic coarctation especially with aortic arch hypoplasia and other arch alterations such as aortic arch interruption, using selective cerebral perfusion techniques
	Perform Tirone David surgery especially with patients with Marfan type anomalies who have ascending aortic aneurysms
<b>Transition and Congenital Heart Disease in Adults</b>	Proceed to cardiac transplantation, with ECMO type ventricular assistance
	Implement interventional surgical treatment for the correction of aortic valve disease
	Use palliative surgeries such as systemic pulmonary fistulas and pulmonary cerclage for ventricular preparation and subsequent surgeries.
	Close the Ostium Secundum type atrial septal defect by means of extracardiac Cortocircuits
	Apply the Transposition corrected of great arteries Mitral atresia

## 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 practical training 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 Hybrid Professional Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

**4. CERTIFICATION:** Professionals who pass the Hybrid Professional Master's Degree will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** The Hybrid Professional Master's Degree shall not constitute an employment relationship of any kind.

**6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Hybrid Professional Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

**7. DOES NOT INCLUDE:** The Hybrid Professional Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

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

08

# Where Can I Do the Clinical Internship?

This Hybrid Professional Master's Degree is completed with a clinical practice in state-of-the-art hospital institutions. For this phase of the educational process, TECH has chosen the best facilities where the pediatric cardiologist will have access to first level diagnostic tools and techniques. Likewise, they will participate in high caliber surgical interventions where they will offer innovative health solutions to real pediatric patients. At the same time, throughout the didactic process, they will be accompanied by prestigious experts with extensive experience.



“

*The TECH classroom practice will uniquely complement the theoretical knowledge you acquire during the initial theoretical phase of this Hybrid Professional Master's Degree"*



Medicine.

### Hospital HM Nou Delfos

Country	City
Spain	Barcelona

Address: Avinguda de Vallcarca, 151,  
08023 Barcelona

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

**Related internship programs:**

- Pain Management for Nursing
- Gynecological Care for Midwives



Medicine.

### Hospital HM Montepríncipe

Country	City
Spain	Madrid

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

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

**Related internship programs:**

- Pain Management for Nursing
- Gynecological Care for Midwives



Medicine.

### Hospital HM Sanchinarro

Country	City
Spain	Madrid

Address: Calle de Oña, 10, 28050, Madrid

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

**Related internship programs:**

- Gynecological Care for Midwives
- Nursing Management



Medicine.

### Hospital HM Nuevo Belén

Country	City
Spain	Madrid

Address: Calle José Silva, 7, 28043, Madrid

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

**Related internship programs:**

- Nursing in Internal Medicine
- Update on Psychiatry





Medicine.

### Hospital HM Puerta del Sur

Country	City
Spain	Madrid

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

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

- Related internship programs:**
- Pain Management for Nursing
  - Gynecological Care for Midwives



Medicine.

### HM CIEC - Centro Integral de Enfermedades Cardiovasculares

Country	City
Spain	Madrid

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

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

- Related internship programs:**
- Cardiac Arrhythmias
  - Cardiac Surgery



Medicine.

### HM CIEC Barcelona

Country	City
Spain	Barcelona

Address: Avenida de Vallcarca, 151, 08023, Barcelona

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

- Related internship programs:**
- Cardiac Arrhythmias
  - Cardiac Surgery



Medicine.

### Policlínico HM Sanchinarro

Country	City
Spain	Madrid

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

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

- Related internship programs:**
- Gynecological Care for Midwives
  - Nursing in the Gynecology Service

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.







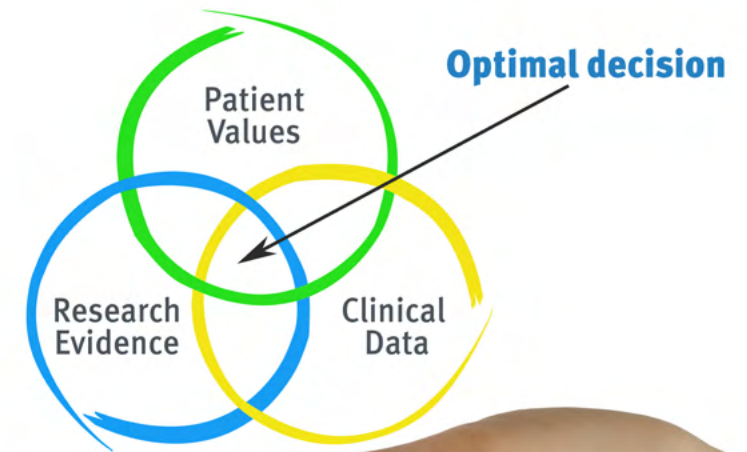
“

*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 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.

“

*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.



# 10 Certificate

This Hybrid Professional Master's Degree in Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease guarantees students, in addition to the most rigorous and up-to-date education, access to a Hybrid Professional Master's Degree diploma 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 Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease** contains the most complete and up-to-date program on the professional and educational field.

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

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

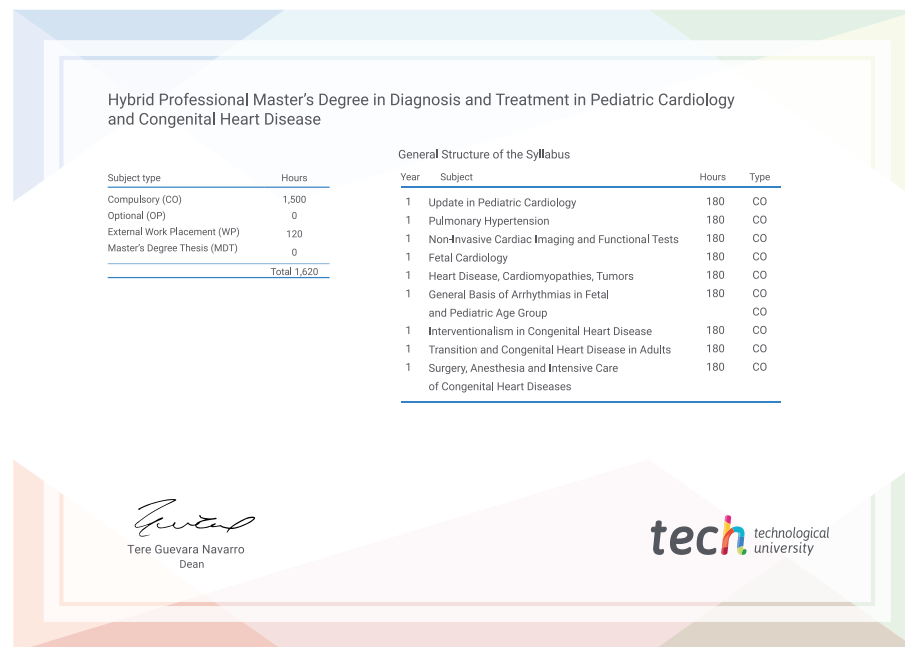
Program: **Hybrid Professional Master's Degree in Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease**

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

Duration: **12 months**

Certificate: **TECH Technological University**

Official hours: **1,620 h.**



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

future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

**tech** technological  
university

Hybrid Professional Master's  
Degree

Diagnosis and Treatment  
in Pediatric Cardiology and  
Congenital Heart Disease

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.

# Hybrid Professional Master's Degree

Diagnosis and Treatment  
in Pediatric Cardiology and  
Congenital Heart Disease

