

# Postgraduate Diploma Aortic Surgery





## Postgraduate Diploma Aortic Surgery

Course Modality: **Online**

Duration: **6 months**

Certificate: **TECH Technological University**

Official N° of hours: **450 h.**

Website: [www.techtute.com/medicine/postgraduate-diploma/postgraduate-diploma-aortic-surgery](http://www.techtute.com/medicine/postgraduate-diploma/postgraduate-diploma-aortic-surgery)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

---

*p. 20*

06

Certificate

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*p. 28*

# 01

# Introduction

In order to treat a series of conditions that cause Aortic Disease, it is necessary to implement surgical procedures, whether it is an aneurysm or dissection. Procedures that require precision and efficiency in the work because it is a complex surgery. However, thanks to scientific and technological advances, methods have advanced, making it possible to perform surgery with minimally invasive techniques. This program has been created with the aim of providing a global vision of aortic pathologies and the most innovative techniques for their surgical approach, taking into account new technologies for the management and control of extracorporeal circulation, as well as perioperative care. All this, through the most innovative methodology of the current university environment and a 100% online study system, to achieve a quality degree in an agile and comfortable way.





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*Broaden your understanding of extracorporeal circulation and new technologies for its management and control"*

The Surgical Approach for the Repair of the Structures of the Aorta to prevent internal bleeding occurs in most cases in the emergency room, however, with the advancement of techniques in the last 20 years, in addition to open surgery, it is also possible to use less invasive methods when attending them, as well as to establish a previous study of the patient to avoid further damage and to reach cases of extreme alertness.

The specialist must know how to take the patient in the best conditions to surgery through preoperative optimization and continue with monitoring in the operating room. To carry out a study of post-surgical complications in the different systems and to learn how to have strategies aimed at reducing blood product transfusions to a minimum. To this end, this program proposes the study of perioperative care in depth, in order to avoid complications and reduce mortality.

Likewise, this refresher program is based on the Anatomy and Physiology of the Aortic Root, given its involvement in Aortic Valve Function and its importance in Aortic Valve Preservation Techniques. Then, the main Pathologies of the Aortic Artery by segments and the Acute Aortic Syndrome with its main Surgical Options and the different options of Percutaneous Treatment will be discussed.

Simultaneously, the surgeon must understand the new technologies available for the management and control of Extracorporeal Circulation as a whole and apply them efficiently in the operating room. All this, through an avant-garde teaching methodology implemented by TECH, aware of the difficulty that the specialist has when taking on a degree of these characteristics, which is why it offers it 100% online.

This means that there are neither fixed classes nor fixed schedules, being the specialist themselves the one who decides where and how to face the teaching load. The contents are available 24 hours a day from day one from any device with an internet connection, and can even be downloaded for later offline consultation.

The **Postgraduate Diploma in Aortic Surgery** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ Practical cases presented by experts in Cardiac Surgery
- ♦ The graphic, schematic, and eminently practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where self-assessment can be used to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions for experts and individual reflection work
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



*It updates the knowledge of all perioperative measures and strategies to be taken into account in surgical patients, for a better recovery, avoid complications and reduce mortality"*

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*In this program you will learn in depth about the main pathologies of the Aortic Artery and the Acute Aortic Syndrome with its main surgical options"*

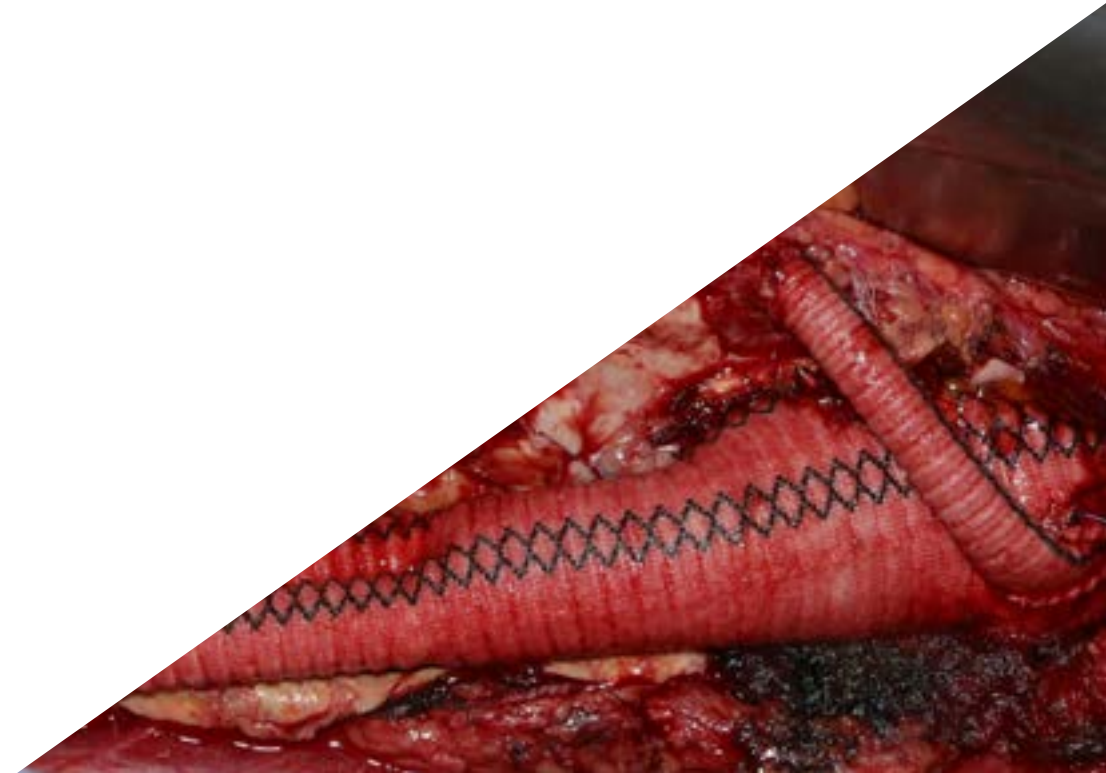
The program's teaching staff includes professionals from the sector who contribute their work experience to this training program, as well as renowned specialists from leading societies and prestigious universities.

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 training programmed to train in real situations.

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

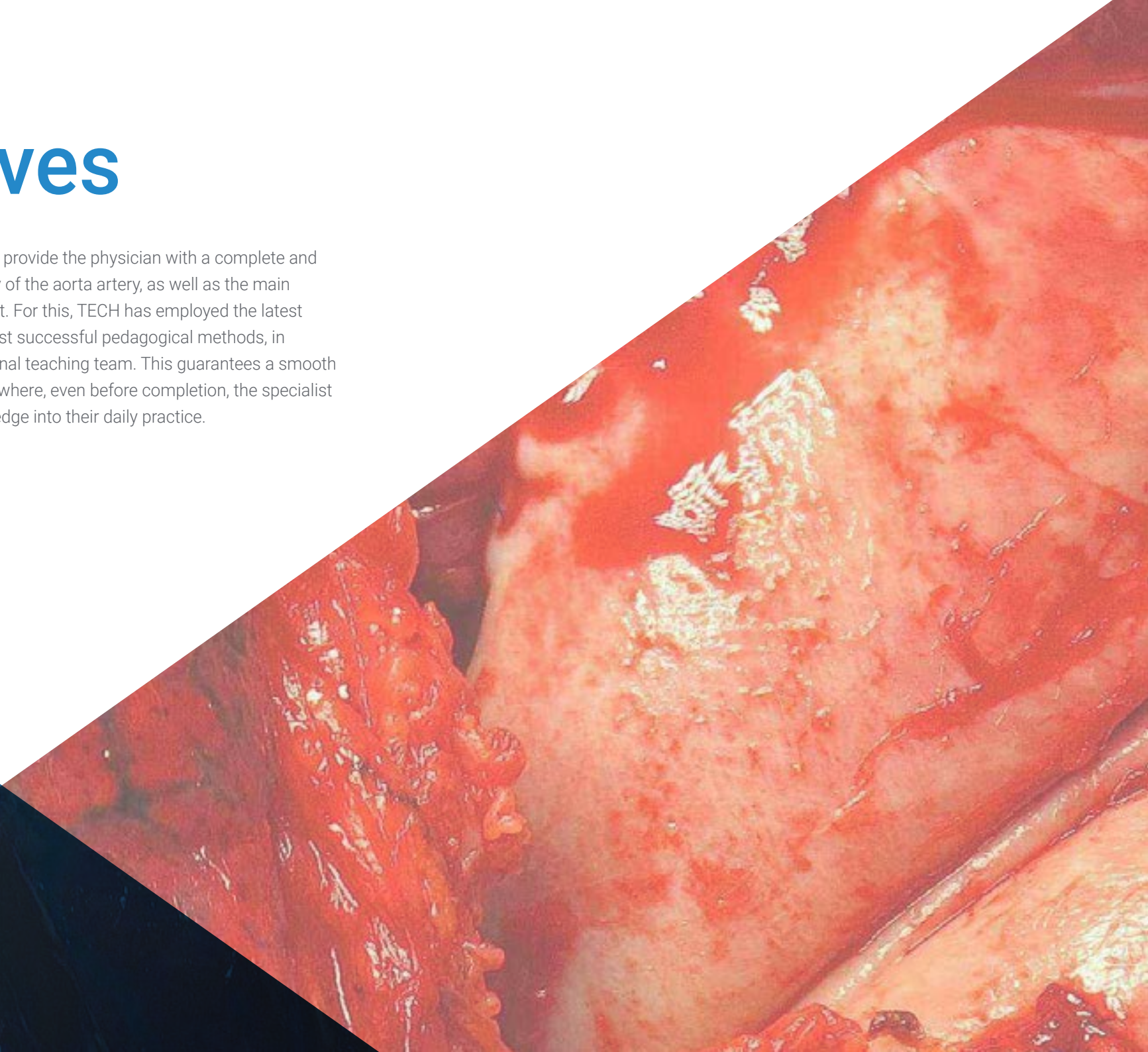
*TECH's study system will allow you to organize your time and learning pace, adapting it to your schedule.*

*knowledge different percutaneous treatment options.*



# 02 Objectives

This Postgraduate Diploma aims to provide the physician with a complete and exhaustive update on the pathology of the aorta artery, as well as the main therapeutic options for its treatment. For this, TECH has employed the latest educational technology and the most successful pedagogical methods, in addition to having a great professional teaching team. This guarantees a smooth and efficient academic experience, where, even before completion, the specialist incorporates all the updated knowledge into their daily practice.







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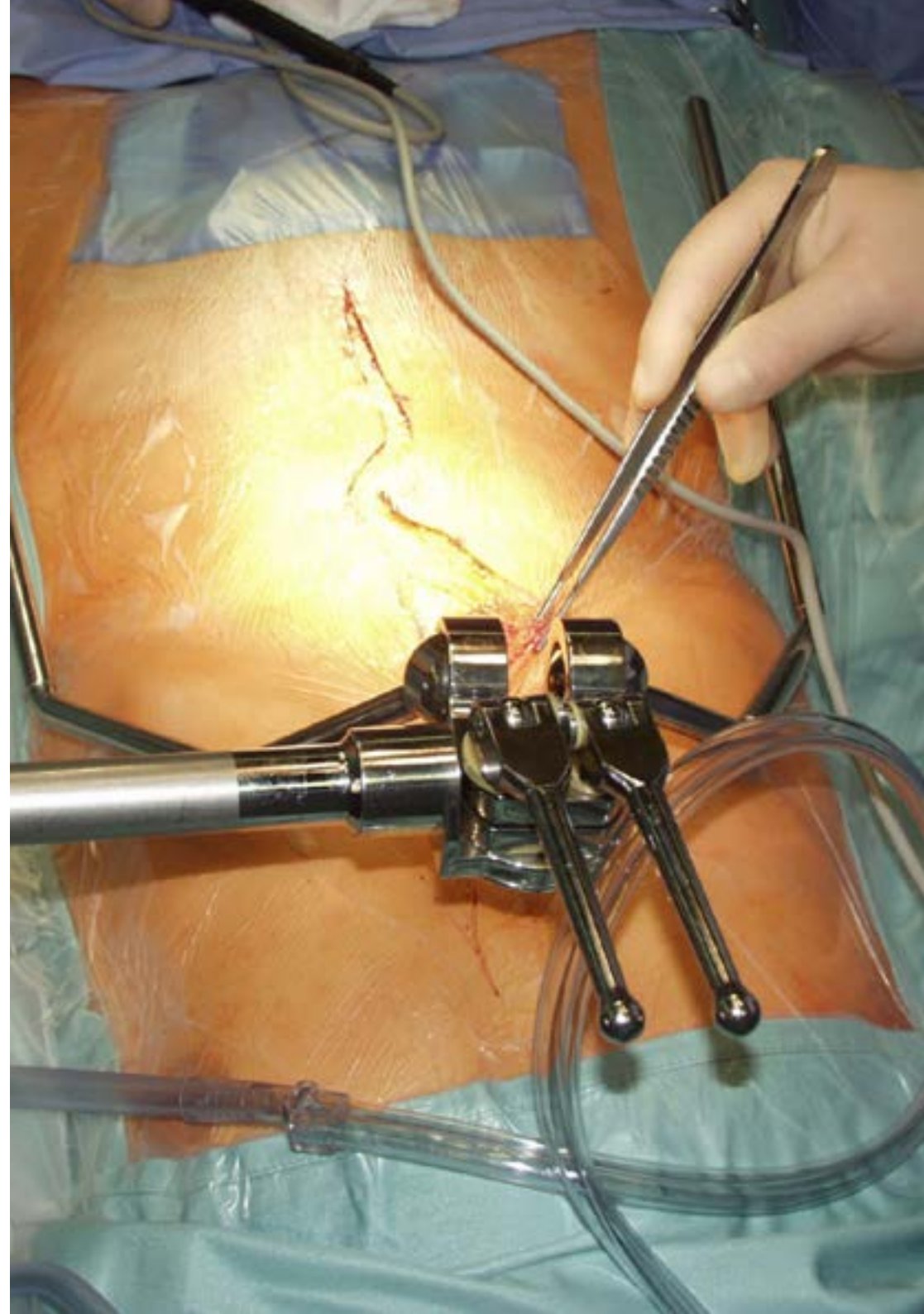
*Achieving a specific qualification is possible with TECH, in just 6 months and without major sacrifices”*



## General objectives

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- Delve into the knowledge of all cardiac diseases and their forms of treatment
- Broaden the knowledge and understanding of extracorporeal circulation as a whole
- Analyze the importance of new technologies involved in the management and control of cardiac pathologies and imaging techniques
- Obtain the necessary knowledge to improve patient recovery, avoid complications and reduce mortality
- Obtain the most updated knowledge to approach comprehensively and from the surgical point of view, as appropriate all valvular pathologies, ischemic heart, aortic pathology and congenital heart diseases
- Deepen in the treatment of other cardiac pathologies, transcatheter valve implantation and concomitant diseases





## Specific objectives

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### Module 1. Extracorporeal Circulation C.E.C.

- ♦ Broaden the knowledge and understanding of extracorporeal circulation as a whole
- ♦ Deepen in the new technologies implemented for its management and control
- ♦ Master protection and monitoring methods
- ♦ Master the techniques of cerebral cannulation and perfusion

### Module 2. Preoperative Care

- ♦ Deepen the knowledge of all perioperative measures and strategies
- ♦ Update the techniques of monitoring in the operating room
- ♦ Understand ways to improve for optimal recovery of the surgical patient
- ♦ Learn more about the techniques to be applied before the operation to avoid complications and reduce mortality
- ♦ Achieve more efficient postoperative control
- ♦ Reduce transfusions of blood products as much as possible

### Module 3. Pathology of the Aorta

- ♦ Deepen the notions of anatomy and physiology of the aortic root, given its involvement in the functioning and preservation of the aortic valve
- ♦ Learn more about surgical treatment techniques for acute aortic syndrome
- ♦ Review the main pathologies of the aorta artery by segments
- ♦ Observe the implications of acute aortic syndrome with its main surgical options
- ♦ Check different percutaneous treatment options



*This program gives you the freedom and convenience of studying from wherever, whenever and however you want. Start now"*

03

# Course Management

TECH has selected a teaching team of renowned experience and extensive clinical and scientific knowledge, with pedagogical skills adjusted to the most innovative study methodology developed in a completely virtual way. This offers a modern and quality seal, so that the physician obtains the most up-to-date tools and knowledge to perform efficiently in the surgical processes and approach to the pathologies of the aorta artery.





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*TECH has chosen for this program the most outstanding specialists in the area of cardiac surgery in the country, with an outstanding track record"*

## Management



### Dr. Rodríguez-Roda, Jorge

- ◆ Head of Cardiac Surgery Service by competitive examination. Ramón y Cajal University Hospital
- ◆ Cardiac Surgeon of the Cardiac Surgery Unit. Montepíncipe Madrid Hospital HM Group
- ◆ Professor Collaborating in the Department of Surgery. Alcalá de Henares University
- ◆ Assistance Coordinator of the Cardiovascular Surgery Service. Gregorio Marañón General University Hospital
- ◆ Assistant Physician of Cardiovascular Surgery at General UH Gregorio Marañón, Hospital Central de la Defensa Gómez Ulla and Hospital del Aire, Madrid
- ◆ Resident Physician of the Specialty of Cardiovascular Surgery in the Cardiovascular and Thoracic Surgery Service. Puerta de Hierro University Hospital. Madrid
- ◆ Medical Officer of the Common Bodies of Defense
- ◆ Member of important scientific committees in Europe, Speaker and moderator of a variety of congresses and events related to cardiac surgery
- ◆ Author and contributor to countless publications, journals and books aimed at the medical community related to cardiac surgery

## Professors

### Dr. Zamorano Serrano, José Ángel

- ♦ Cardiac Surgery Perfusionist. Montepríncipe University Hospital
- ♦ DUE Cardiac Surgery Perfusionist. Gregorio Marañón General University Hospital
- ♦ DUE Santa Cristina University Hospital
- ♦ Humanitarian mission at La Mascota Hospital in Managua Nicaragua
- ♦ Doctor in Health Sciences. Complutense University of Madrid
- ♦ Professional Master's Degree in Research, University of Health. Complutense University of Madrid
- ♦ Complutense University of Madrid European Board of Cardiovascular Perfusion
- ♦ Master in Perfusion Techniques and Extracorporeal Oxygenation. University of Barcelona

### Dr. Martin, Miren

- ♦ Cardiovascular Surgery Specialist. Ramón y Cajal University Hospital
- ♦ Resident Intern Doctor Ramón y Cajal University Hospital
- ♦ Bachelor of Medicine and Surgery Degree entity. University of the Basque Country
- ♦ Master in Cardiac Surgery Minimum access. University of Malaga
- ♦ Master's Degree in Cardiovascular Emergencies. University of Alcalá
- ♦ Specialization in Clinical Research Methodology for Residents. University of Alcalá
- ♦ Specialist in Cardiovascular Surgery. Ramón y Cajal University Hospital

### Dr. Pedraz Prieto, Álvaro

- ♦ Facultative Area Specialist in General Surgery. Gregorio Marañón General University Hospital
- ♦ Facultative Area Specialist in General Surgery. Montepríncipe Hospital
- ♦ Collaborating Physician in Practical Teaching, Department of Surgery, School of Medicine. Complutense University of Madrid
- ♦ Guest "Observer" in the cardiovascular surgery service. Icahn School of Medicine at Mount Sinai
- ♦ Degree in Medicine. University of Salamanca
- ♦ Master's Degree in Research Methodology in Health Sciences. University of Salamanca
- ♦ Specialist in Cardiovascular Surgery. General University Hospital

# 04

## Structure and Content

This refresher program consists of 3 modules that are distributed in a variety of written and audiovisual formats, arranged in the most modern study platform, adjusted to the most advanced methodology of today's university environment, which allows the rapid learning of concepts and their easy understanding. The student can access the entire syllabus from any device with an internet connection from the first day for consultation or download.





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*Relearning makes intensive use of self-assessment in the study of each lesson. Meet the methodology that is revolutionizing the university world"*

## Module 1. Extracorporeal Circulation C.E.C.

- 1.1. History of the CEC
- 1.2. General Principles of the CEC
- 1.3. Components of CEC
  - 1.3.1. Mechanical Pumps
  - 1.3.2. Oxygenation
  - 1.3.3. Heat Exchanger
  - 1.3.4. Circuits and Filters
- 1.4. Hypothermia
  - 1.4.1. Physiology of Hypothermia
  - 1.4.2. Ph Control
  - 1.4.3. Techniques of Hypothermia
- 1.5. Ischemia-Reperfusion
  - 1.5.1. Free Radicals
  - 1.5.2. High Energy Phosphates
  - 1.5.3. Calcium
  - 1.5.4. Vascular Endothelium
- 1.6. Methods of Myocardial Protection
  - 1.6.1. Basic Principles of Cardioplegia
  - 1.6.2. Types of Cardioplegia
- 1.7. Secondary Effects of CEC
  - 1.7.1. Coagulation Alterations
  - 1.7.2. Pulmonary Alterations
  - 1.7.3. Neurological Alterations
  - 1.7.4. Renal Alterations
  - 1.7.5. Inflammatory Response

- 1.8. Monitoring During CEC
  - 1.8.1. Cardiovascular Monitoring
  - 1.8.2. Safety Devices
  - 1.8.3. Heat Exchanger
  - 1.8.4. Blood Gases
  - 1.8.5. Pressure
  - 1.8.6. Brain Saturation
  - 1.8.7. Flows
- 1.9. Cannulation Techniques
  - 1.9.1. Types of Cannulas
  - 1.9.2. Access for Cannulation
  - 1.9.3. Special Situations
- 1.10. Cerebral Perfusion

## Module 2. Preoperative Care

- 2.1. Preoperative Optimization
  - 2.1.1. Risk Assessment
  - 2.1.2. Nutritional status
  - 2.1.3. Anemia
  - 2.1.4. Diabetes Mellitus
  - 2.1.5. ATB Prophylaxis
- 2.2. Intraoperative
  - 2.2.1. Monitoring
  - 2.2.2. Anesthetic Induction and Maintenance
  - 2.2.3. Fluid Use
  - 2.3.4. Pulmonary Hypertension
- 2.3. Cardiovascular System
  - 2.3.1. Volemia and Contractility
  - 2.3.2. Postoperative AMI
  - 2.3.3. Arrhythmias
  - 2.3.4. Cardiopulmonary Resuscitation and Cardiopulmonary Arrest

- 2.4. Low-expenditure Syndrome
  - 2.4.1. Monitoring and Diagnosis
  - 2.4.2. Treatment
- 2.5. Respiratory System
  - 2.5.1. Postoperative Changes in Pulmonary Function
  - 2.5.2. Ventilator Management
  - 2.5.3. Pulmonary Complications
- 2.6. Renal Function
  - 2.6.1. Renal Pathophysiology
  - 2.6.2. Predisposing Factors for Renal Failure
  - 2.6.3. Prevention of Renal Failure
  - 2.6.4. Treatment of Renal Failure
- 2.7. Nervous System Neurological Damage
  - 2.7.1. Types of Neurological Damage.
  - 2.7.2. Risk Factors
  - 2.7.3. Etiology and Prevention
  - 2.7.4. Neuropathy in Critically Ill Patients
- 2.8. Hematologic Complications
  - 2.8.1. Postoperative Bleeding
  - 2.8.2. Diagnosis of Coagulopathies
  - 2.8.3. Prevention of Bleeding
  - 2.8.4. Treatment
- 2.9. Infections
  - 2.9.1. Pneumonia Associated with Mechanical Ventilation
  - 2.9.2. Infection of Surgical Wounds
  - 2.9.3. Infections Associated with Catheter Devices
  - 2.9.4. Antibiotic Prophylaxis
- 2.10. Optimization of Blood Derivative Transfusion

### Module 3. Pathology of the Aorta

- 3.1. Anatomy and Function of the Aortic Root
- 3.2. Pathology and Treatment of the Aortic Root
- 3.3. Aneurysm of the Thoracic Aorta
  - 3.3.1. Aetiopathogenesis.
  - 3.3.2. Natural History
  - 3.3.3. Treatment
- 3.4. Thoraco-Abdominal Aneurysm
- 3.5. Acute Aortic Syndrome
  - 3.5.1. Classification
  - 3.5.2. Microbiological
- 3.6. Surgical Treatment of Acute Aortic Syndrome
- 3.7. Coadjuvant Techniques in the Surgical Treatment of Acute Aortic Syndrome
- 3.8. Surgery the Aortic Arch
- 3.9. Percutaneous Treatment
- 3.10. Aortitis



*Enroll now and study with the complete comfort provided by TECH's methodology, 100% online and based on relearning"*

05

# Methodology

This training program provides you with 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 Harvard case method with the best 100% online teaching methodology available: Relearning.

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



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



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

With this methodology, more than 250.000 physicians have been 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 multimedia content presentation training Exclusive system 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 your goals.



#### Classes

There is scientific evidence on the usefulness of learning by observing experts: The system termed Learning from an Expert strengthens knowledge and recall capacity, and generates confidence in the face of difficult decisions in the future.



#### 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 Diploma in the Aorta Surgery guarantees you, in addition to the most rigorous and updated training, access to a Postgraduate Diploma issued by TECH Technological University.



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*Successfully complete this program  
and receive your diploma without  
travel or cumbersome paperwork”*

The **Postgraduate Diploma in Aortic Surgery** contains the most complete and updated program on the market.

After the student has passed the evaluations, they will receive their corresponding **Postgraduate Diploma** issued by **TECH Technological University** by tracked delivery\*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Professional Master's Degree, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Aorta Surgery**

Official Number of hours: **450 h.**



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

health future  
confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present quality  
development languages  
virtual classroom



**Postgraduate Diploma**  
**Aortic Surgery**

Course Modality: Online

Duration: 6 months

Certificate: TECH Technological University

Official N° of hours: 450 h.

# Postgraduate Diploma Aortic Surgery

