

# Postgraduate Diploma Coronary Surgery





## Postgraduate Diploma Coronary Surgery

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

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

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# 01

# Introduction

Coronary artery disease and its complications represent the leading cause of death in the West. Despite the communication efforts of different organizations to promote healthier habits, people's lifestyles do not achieve the eradication of these pathologies. The treatment in many cases turns to surgery and the specialist must know the latest trends in methods and techniques that are more efficient. This program has been created with the aim of providing an overview of the vast world of heart disease through a detailed review of the most common pathologies and the latest techniques for surgical approach considering the new technologies for the management and control of extracorporeal circulation. All this, through the most innovative methodology of the current university environment and a 100% online study system, to achieve the degree in 6 months.





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*It delves into the surgical complications of myocardial infarction and the techniques to treat them"*

Most patients present symptoms commonly known as chest angina or infarction when the coronary obstruction is severe, greater than 70%. Even those with significant lesions usually do not present symptoms, fortunately this is not the majority of cases presented. That is why this program reflects the study of the Physiology of Myocardial Ischemia and Angina and Infarction to follow with the diagnostic methods and natural history of Coronary Artery Disease.

Highlight the importance of the heart team in addressing different medical, percutaneous and surgical treatment strategies. As well as the surgical complications of myocardial infarction and the latest techniques to treat them. It does not exclude the analysis of the most significant randomized studies in ischemic heart disease, being an important part of the program's content.

In this way, the knowledge and understanding of Extracorporeal Circulation as a whole and the knowledge of the new technologies available for its management and control are expanded. 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.

This **Postgraduate Diploma in Coronary Surgery** is the most comprehensive and up-to-date educational 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



*In-depth study of the knowledge about the conduction system, coronary anatomy, great vessels and peripheral vascular system"*

“

*Expert teachers select for you the most relevant concepts of each lesson. They synthesize them and present them as interactive multimedia elements”*

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.

*Learn about new trends in Cardiovascular Pharmacology.*

*Broaden your knowledge and understanding of Extracorporeal Circulation as a whole for the development of effective Surgical Processes.*

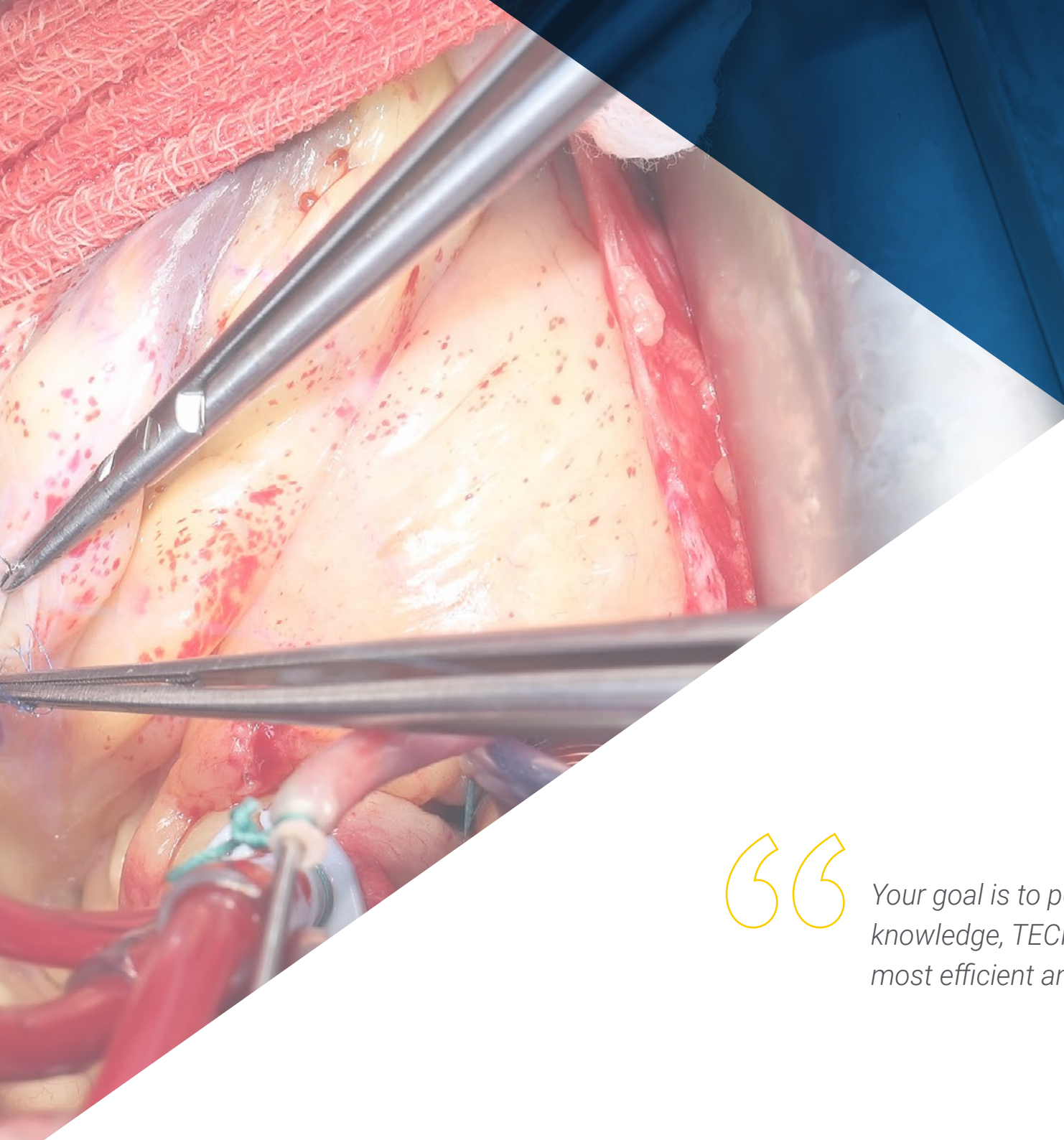


# 02 Objectives

This Postgraduate Diploma aims to offer the physician a complete and comprehensive update on the tools necessary to develop skills and knowledge in the development of Coronary Surgery. 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 up-to-date knowledge into their daily practice.







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*Your goal is to perfect your skills and knowledge, TECH's goal is for you to do it in the most efficient and comfortable way"*



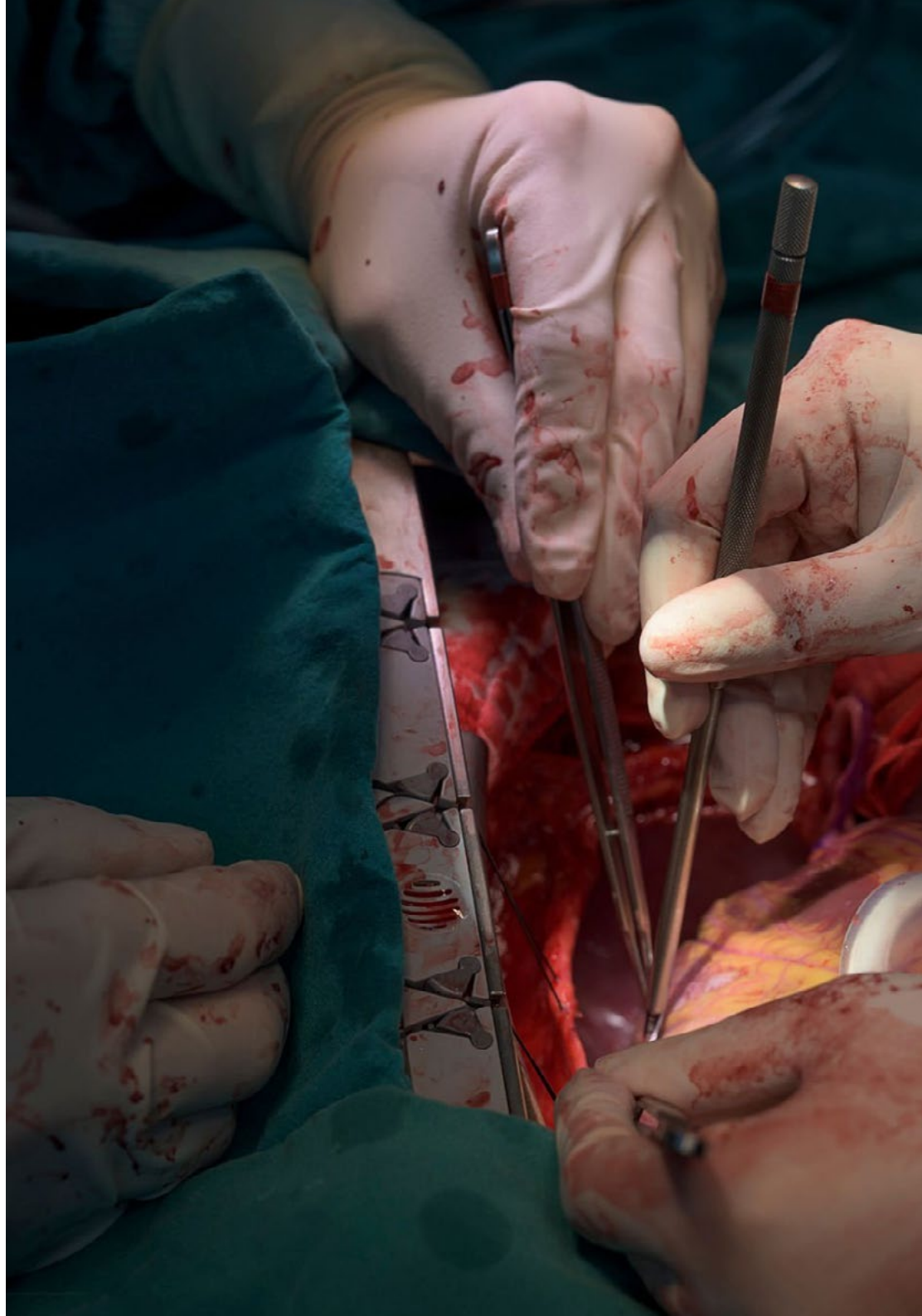
## General Objectives

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- ◆ Deepen 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



*You will have access to all the content from the very first moment, 24 hours a day. Both for consultation and for downloading from any device"*







## Specific Objectives

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### Module 1. Anatomy and Pathophysiology of the Cardiovascular System

- ◆ Study embryology to understand the origin of cardiac anatomy
- ◆ Outline the basic aspects of the pathophysiology of the heart
- ◆ In-depth study of the conduction system, coronary anatomy, great vessels and peripheral vascular system
- ◆ Deepen in the knowledge of all cardiac diseases
- ◆ Analyze hemostasis and the different pathways blood coagulation
- ◆ Learn about new trends in Cardiovascular Pharmacology

### Module 2. 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 3. Ischemic Heart Disease

- ◆ Obtain a multi-angle view of ischemic heart disease
- ◆ A comprehensive approach to ischemic heart disease
- ◆ Learn more about angina and infarction
- ◆ Evaluate the diagnostic methods and natural history of coronary artery disease
- ◆ Understand the importance of the *heart team* in addressing different medical, percutaneous and surgical treatment strategies
- ◆ Delve into the surgical complications of myocardial infarction and the techniques to treat them

# 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 a multi-angle vision of ischemic heart disease and evaluates the diagnostic methods of coronary disease.







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*You will share the experience with other leading professionals in an interactive way. Which will add value to the update process”*

## Management



### Dr. Rodríguez-Roda, Jorge

- ♦ Head of the Cardiovascular Surgery Service at the Ramón y Cajal University Hospital
- ♦ Cardiac Surgeon of the Cardiac Surgery Unit of the Hospital Madrid Montepríncipe
- ♦ Collaborating Professor of the Department of Surgery at the University of Alcalá de Henares
- ♦ Assistance Coordinator of the Cardiovascular Surgery Service of the Gregorio Marañón General University Hospital
- ♦ Assistant Physician of Cardiovascular Surgery at the Gregorio Marañón General University Hospital, Gómez Ulla Central Defense Hospital and Airforce Hospital
- ♦ Resident Doctor of the specialty of Cardiovascular Surgery in the Department of Cardiovascular and Thoracic Surgery. Puerta de Hierro University Hospital. Madrid
- ♦ Medical Officer in the Spanish Military Health Corps
- ♦ Degree in Medicine and Surgery, Complutense University of Madrid
- ♦ Executive Master's Degree in Healthcare Organization Management ESADE
- ♦ Healthcare Organization Leadership Program at Georgetown University
- ♦ Resident Medical Intern in the specialty of Cardiovascular Surgery at the Cardiovascular and Thoracic Surgery Service of the Puerta de Hierro University Hospital, Autonomous University of Madrid
- ♦ Diploma of Advanced Studies (DEA) from the Department of Surgery, Faculty of Medicine, Complutense University of Madrid
- ♦ General Practitioner in the Spanish National Health System and in the Public Social Security Systems of the Member States of the European Communities

## Professors

### Dr. López Menéndez, José

- ◆ Specialist in adult cardiac surgery. Ramón y Cajal University Hospital.
- ◆ Cardiac Surgery Specialist. University Hospital of Oviedo
- ◆ Clinical Professor in the Department of Surgery at the University of Alcalá de Henares.
- ◆ Resident tutor. MIR training in cardiovascular surgery. Gregorio Marañón Hospital, Madrid
- ◆ Faculty Area Specialist Asturias Central University Hospital
- ◆ Doctor in Official Postgraduate Program in Health Sciences and Biomedicine. University of Oviedo
- ◆ Degree in Medicine and Surgery. University of Oviedo
- ◆ Extraordinary award at the end of the degree. University of Oviedo
- ◆ Master's Degree in Research Methodology in Health Sciences. Autonomous University of Barcelona
- ◆ Master's Degree in "*Innovations in Cardiac Surgery*". Sant'Anna High School, University of Pisa, Italy
- ◆ Postgraduate in Statistics and Health Sciences City. Autonomous University of Barcelona
- ◆ Specialization in Cardiovascular Surgery. Gregorio Marañón General University Hospital

### Dr. Varela Barca, Laura

- ◆ Resident Intern at the Adult Cardiac Surgery Department of the Ramón y Cajal University Hospital of Madrid
- ◆ Attending Physician of the Adult Cardiac Surgery Service of the Son Espases University Hospital of Palma de Mallorca
- ◆ Attending Physician, Cardiac Surgery Department, Fundación Jiménez Díaz University Hospital
- ◆ D. from the University of Alcalá de Henares in Health Sciences
- ◆ Degree in Medicine from the - Faculty of Medicine at the University of Valladolid
- ◆ Master's Degree in Cardiovascular Emergencies from the University Alcalá de Henares

# 04

## Structure and Content

This Postgraduate Diploma in Coronary Surgery consists of 3 modules that are distributed in a variety of written and audiovisual formats, based on the most advanced methodology of the current university environment, which allows the rapid learning of concepts and their easy understanding. Through a variety of multimedia and interactive resources, the student perceives dynamism in a comfortable development and follow-up, from any device with internet connection. With the contents available from day one, including for download.





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*TECH begins each lesson by presenting the background texts in a scientific-professional format. In-depth coverage of the theoretical corpus of each area, in each lesson”*

## Module 1. Anatomy and Pathophysiology of the Cardiovascular System

- 1.1. Embryology
- 1.2. Anatomy
  - 1.2.1. Cardiac Cavities
  - 1.2.2. Inter-atrial and Inter-ventricular Septum
  - 1.2.3. Heart Valves
- 1.3. Biochemistry of the Heart
  - 1.3.1. Metabolic Regulation
  - 1.3.2. Regulation of Oxygen Consumption
  - 1.3.3. Plasma Lipoproteins
- 1.4. Conduction System
- 1.5. Coronary Anatomy and Coronary Pathophysiology
- 1.6. Large Vessels and Peripheral Vascular System
- 1.7. Physiology of the Cardiovascular Apparatus
- 1.8. Anatomic-Physiology of Pulmonary Circulation
- 1.9. Hemostasis and Blood Coagulation
- 1.10. Update on Cardiovascular Pharmacology

## Module 2. Extracorporeal Circulation C.E.C.

- 2.1. History of C.E.C.
- 2.2. General Principles of the CEC.
- 2.3. C.E.C. Components
  - 2.3.1. Mechanical Pumps
  - 2.3.2. Oxygenation
  - 2.3.3. Heat Exchanger
  - 2.3.4. Circuits and Filters
- 2.4. Hypothermia
  - 2.4.1. Physiology of Hypothermia
  - 2.4.2. Ph Control
  - 2.4.3. Techniques of Hypothermia

- 2.5. Ischemia-Reperfusion
  - 2.5.1. Free Radicals
  - 2.5.2. High Energy Phosphates
  - 2.5.3. Calcium
  - 2.5.4. Vascular Endothelium
- 2.6. Methods of Myocardial Protection
  - 2.6.1. Basic Principles of Cardioplegia
  - 2.6.2. Types of Cardioplegia
- 2.7. Secondary Effects of CEC
  - 2.7.1. Coagulation Alterations
  - 2.7.2. Pulmonary Alterations
  - 2.7.3. Neurological Alterations
  - 2.7.4. Renal Alterations
  - 2.7.5. Inflammatory Response
- 2.8. Monitoring During CEC.
  - 2.8.1. Cardiovascular Monitoring
  - 2.8.2. Safety Devices
  - 2.8.3. Heat Exchanger
  - 2.8.4. Blood Gases
  - 2.8.5. Pressure
  - 2.8.6. Brain Saturation
  - 2.8.7. Flows
- 2.9. Cannulation Techniques
  - 2.9.1. Types of Cannulas
  - 2.9.2. Access for Cannulation
  - 2.9.3. Special Situations
- 2.10. Cerebral Perfusion

## Module 3. Ischemic Heart Disease

- 3.1. Myocardial Ischemia and Myocardial Infarction
  - 3.1.1. Pathophysiology of Atheromatous Plaque
  - 3.1.2. Angina
  - 3.1.3. AMI
- 3.2. Microbiological
  - 3.2.1. Hypnosis
  - 3.2.2. Electrocardiographic Criteria
  - 3.2.3. Enzymatic Modifications
  - 3.2.4. Image
  - 3.2.5. Definition of AMI
- 3.3. Natural History and Prevention
  - 3.3.1. Mortality of AMI
  - 3.3.2. Prevention of Ischemic Heart Disease
- 3.4. Clinical Decisions
  - 3.4.1. *Heart Team*
  - 3.4.2. Analysis of Clinical Practice Guidelines
- 3.5. AMI Management
  - 3.5.1. AMI Code
  - 3.5.2. Thrombolytic Treatment
- 3.6. Percutaneous Treatment
  - 3.6.1. New Generation of *Stents*
  - 3.6.2. Angioplasty
  - 3.6.3. Complications
  - 3.6.4. Results
- 3.7. Surgical Management
  - 3.7.1. Grafts
  - 3.7.2. Anastomosis.
  - 3.7.3. Without ECC
  - 3.7.4. MIDCAB
- 3.8. Surgical Complications from AMI
  - 3.8.1. Ischemic Mitral Insufficiency
  - 3.8.2. VIC
  - 3.8.3. Free Wall Breakage
  - 3.8.4. Ventricular Aneurysm
- 3.9. Combined Coronary Surgery
- 3.10. Relevant Studies in Ischemic Heart Disease



*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 Coronary Surgery guarantees you, in addition to the most accurate and up-to-date training, access to a Postgraduate Diploma issued by TECH Technological University.



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



This **Postgraduate Diploma in Coronary Surgery** contains the most complete and up-to-date scientific program on the market.

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

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Coronary Surgery**

Official N° 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.

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



## Postgraduate Diploma Coronary Surgery

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

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