

# Advanced Master's Degree Cardiac Medicine and Surgery





## Advanced Master's Degree Cardiac Medicine and Surgery

- » Modality: online
- » Duration: 2 years
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/pk/medicine/advanced-master-degree/advanced-master-degree-cardiac-medicine-surgery](http://www.techtitute.com/pk/medicine/advanced-master-degree/advanced-master-degree-cardiac-medicine-surgery)

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# 01

# Introduction

Heart disease is the leading cause of death worldwide. The relationship of these heart diseases with hereditary or congenital issues, or with factors such as obesity or sedentary lifestyles, is of great concern to the international population. Fortunately, the advances that are made every year in terms of treatments, drugs and protocols to treat these patients are increasingly effective and accurate. For this reason, cardiology specialists must continually update their knowledge and perfect the techniques used to treat and manage these clinical cases, in order to be able to offer accurate diagnoses and monitoring based on the latest scientific evidence, aspects that you can work on throughout this program.



A close-up photograph of a surgical procedure. A grey surgical stapler is being used on a patient's arm. The skin is incised, and the underlying tissue is visible. The image is partially obscured by a large blue and white diagonal graphic element.

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*A 100% online qualification that represents a perfect opportunity to update your knowledge of cardiology in a comprehensive way and without having to worry about schedules or face-to-face classes"*

The risk of suffering a heart attack from hereditary or congenital heart disease is very high in society as a whole. According to the World Health Organization, these diseases have been the leading cause of death worldwide for more than 20 years. Therefore, the population has developed an exacerbated fear of suffering from these diseases because the risk factors are wide-ranging and sometimes even impossible to detect early or to identify the causes once they have occurred.

However, cardiac medicine has experienced tremendous progress in recent decades in terms of diagnosis, treatments and techniques for the prevention and intervention of heart diseases, which has been highly beneficial for patients. In relation to this, specialists in this field should continuously dedicate their time to learning about the latest advances, which would enable them to address these types of clinical cases based on the latest scientific evidence in cardiology.

In order to facilitate this task and allow them to pursue a qualification that updates their knowledge in an exhaustive manner and that fits in with the busy schedule of their practice, TECH has developed this comprehensive program in Cardiac Medicine and Surgery. This is a multidisciplinary program that delves into the anatomy and pathophysiology of the cardiovascular system, the specifics of Acute Coronary Syndrome and its derived conditions, and the broad spectrum that encompasses the area of Arrhythmias.

This multidisciplinary course will have a positive impact on improving your patient management skills and help you get up to date by studying the most comprehensive and innovative syllabus in the industry. In addition, there will be hours of additional material in different formats, including clinical cases presented by the teaching team, all of whom are experts in cardiac medicine with extensive experience in the treatment of both common and rare diseases.

This **Advanced Master's Degree in Cardiac Medicine and Surgery** contains the most complete and up-to-date scientific program on the market. The most important features include:

- Case studies presented by experts in cardiology and surgery
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional development
- Practical exercises where the self-assessment process can be carried out to improve learning
- Special emphasis on innovative methodologies in Cardiac Medicine and Surgery
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection work
- Content that is accessible from any fixed or portable device with an Internet connection



*With this Advanced Master's Degree you will obtain a global vision of ischemic heart disease and learn how to approach it comprehensively based on the latest scientific evidence in the field of cardiology"*

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*You will deepen your understanding of the importance of the Heart Team, which will help you hone your leadership skills in terms of making team decisions about the approach to valvular pathologies”*

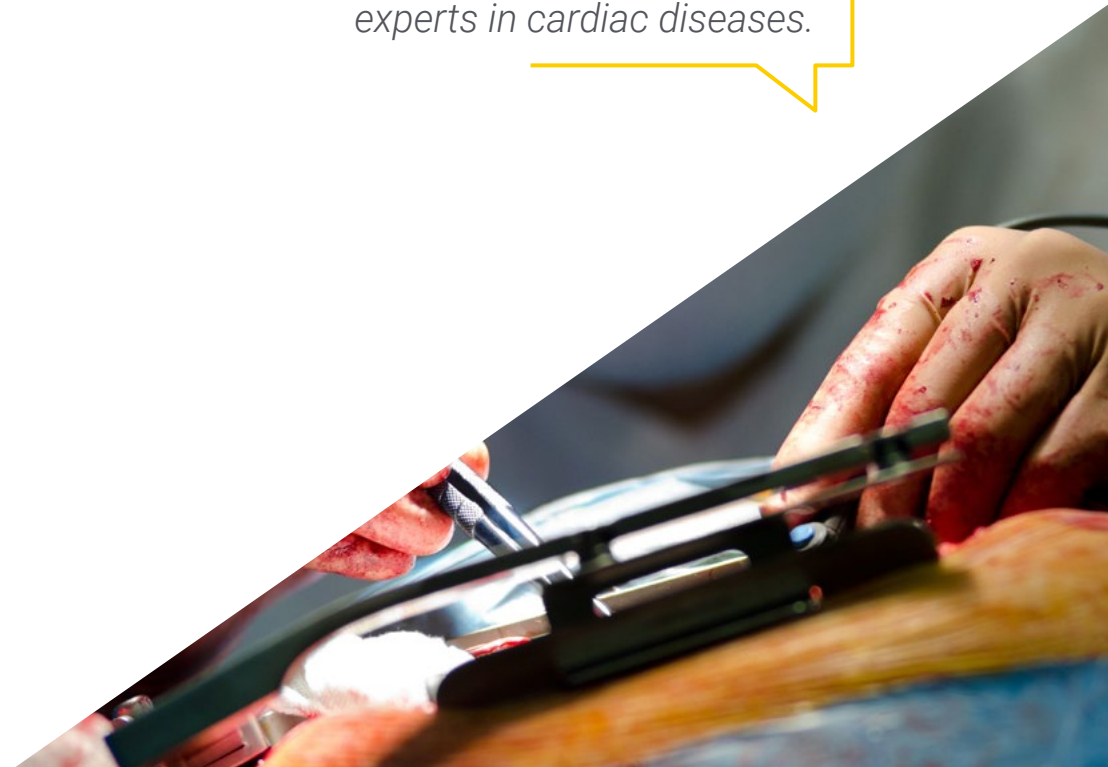
Its teaching staff includes professionals from the field of cardiology, who contribute their work experience to this program, as well as renowned specialists from leading societies and prestigious universities.

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 an immersive learning experience designed to train for real-life situations.

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

*With this Advanced Master's Degree, you will acquire a broad and up-to-date vision of the latest electrostimulation devices, as well as their implantation and explantation.*

*It consists of 3,000 hours of the best theoretical and practical content, including real clinical cases presented by a team of experts in cardiac diseases.*





# 02

# Objectives

The relevance of cardiac medicine in society and the need for patients to receive specific medical attention that is in line with the latest scientific developments, is what motivated TECH to design this program. Furthermore, the university is aware that these specialists have little time to study an academic program, so it has designed this Advanced Master's Degree with the aim of keeping them up to date on the latest developments in relation to Cardiac Medicine and Surgery, ACS and Arrhythmias.







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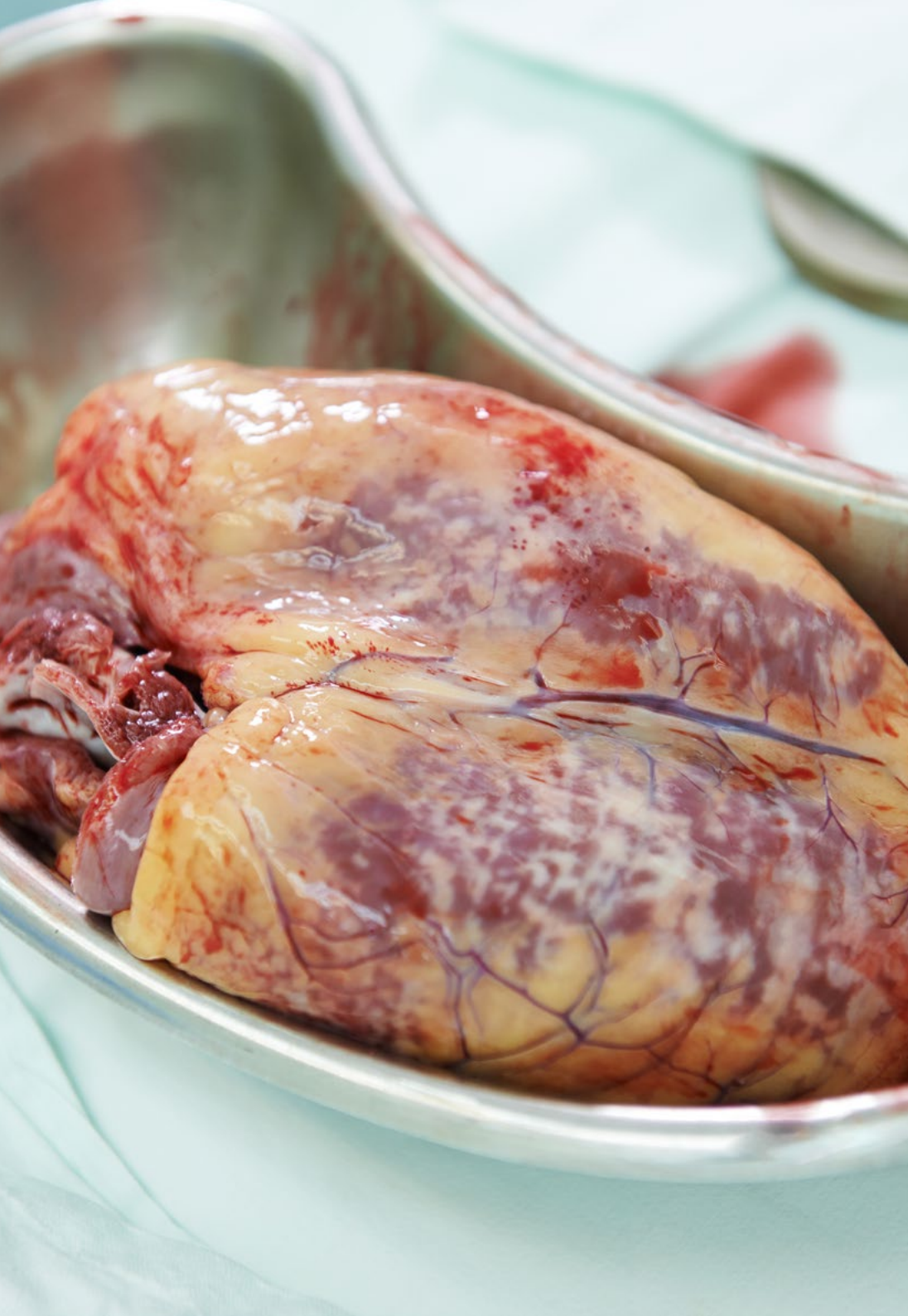
*You will find content dedicated exclusively to the pharmacological recommendations for each cardiac pathology, so that you can compare and implement them in your private practice"*



## General objectives

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- ♦ Acquire in-depth knowledge of all cardiac diseases and their forms of treatment
- ♦ Broaden 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 up-to-date knowledge to approach comprehensively and from the surgical point of view, as appropriate all valvular pathologies, ischemic heart, aortic pathology and congenital heart diseases
- ♦ Delve into the treatment of other cardiac pathologies, transcatheter valve implantation and concomitant diseases
- ♦ Develop in-depth knowledge of Acute Coronary Syndrome (ACS) starting with its pathophysiology and its importance as one of the main causes of death in civilized countries
- ♦ Gain professional skills in the assessment and differential diagnosis of chest pain in the emergency department, understanding the value of the different complementary techniques available
- ♦ Adequately classify the patient's initial risk and the most appropriate prehospital treatment and monitor measures in the prehospital phase
- ♦ Internalize reperfusion therapies, their limitations, advantages and protocols, understand the great importance of ischemia time
- ♦ Diagnose and manage the mechanical and arrhythmic complications that can occur in this syndrome
- ♦ Implement appropriate treatment measures during the hospital phase and the value of Coronary Units
- ♦ Develop the value and structure of Cardiac Rehabilitation programs
- ♦ Understand the treatments that have provided value in secondary prevention of these patients
- ♦ Delve into the diagnosis and treatment of arrhythmias based on clinical and electrocardiographic aspects, as well as invasive techniques and electrophysiological studies
- ♦ Broaden knowledge of the operation, monitor and implantation technique of the main implantable devices used for the treatment of arrhythmias
- ♦ Delve into the problems in cardiac rhythm disorder that can arise across the spectrum of patients
- ♦ Master the rhythm disorder problems present in the various scenarios encountered by the cardiologist in their routine clinical practice



## 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
- ♦ Carry out an in-depth study of the conduction system, coronary anatomy, great vessels and peripheral vascular system
- ♦ Acquire in-depth knowledge of all cardiac diseases
- ♦ Analyze hemostasis and the different pathways of blood coagulation
- ♦ Know the new trends in cardiovascular pharmacology

### **Module 2. Extracorporeal Circulation ECC**

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

### **Module 3. Perioperative Care**

- ♦ Acquire in-depth knowledge of all perioperative measures and strategies
- ♦ Gain up-to-date knowledge of monitoring techniques in the operating room
- ♦ Understand ways to improve for optimal recovery of the surgical patient
- ♦ Perform an in-depth study of the techniques to be applied prior to surgery to avoid complications and reduce mortality
- ♦ Achieve more efficient postoperative control
- ♦ Reduce transfusions of blood products as much as possible



#### **Module 4. Ischemic Heart Disease**

- ♦ Obtain a multi-angle view of ischemic heart disease
- ♦ Know the comprehensive approach to ischemic heart disease
- ♦ Perform an in-depth study of angina and myocardial 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

#### **Module 5. Valvular Pathology**

- ♦ Understand the surgical approach to valvular pathologies
- ♦ Perform an in-depth study of the causes of valvular pathologies and their treatment
- ♦ Understand the importance of the heart team in decision making in the approach to valvular pathologies
- ♦ Acquire in-depth knowledge of all surgical techniques for its treatment, including mini-incision surgery
- ♦ Evaluate different results of the different types of prostheses and surgical techniques used

#### **Module 6. Pathology of the Aorta**

- ♦ Delve into 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

#### **Module 7. Congenital Heart Disease**

- ♦ Provide an overview of congenital heart disease through a detailed review of the most common pathologies
- ♦ Study the physiology of congenital heart diseases in order to group them according to their physiological behavior
- ♦ Make an anatomical description of each group of anomalies
- ♦ Verify the different surgical options to correct congenital cardiopathies
- ♦ Evaluate the best time to correct congenital heart disease

#### **Module 8. Treatment of Other Cardiac Pathologies, Transcatheter Valve Implantation and Concomitant Conditions**

- ♦ Study in depth the different cardiac pathologies and their surgical treatment
- ♦ Acquire in-depth knowledge of cardiac trauma and its surgical management
- ♦ Understand hereditary conditions such as myocardiopathies
- ♦ Delve into the diseases of the pericardium and the different cardiac tumors, both primary and secondary
- ♦ Analyze pulmonary thromboembolism, with its different surgical strategies
- ♦ Evaluate end-stage heart failure, updating knowledge of the new therapies by means of ventricular devices and cardiac transplantation
- ♦ Understand the importance of transcatheter therapies TAVI and mitral
- ♦ Deepen knowledge about certain extracardiac pathologies that interfere with extracorporeal surgery

**Module 9. New Technologies and Imaging Techniques Statistics**

- ♦ Delve into the less common but influential aspects of Cardiac Surgery
- ♦ Evaluate new technologies in Cardiac Surgery for the improvement of therapies
- ♦ Raise the level of interpretation of cardiovascular imaging
- ♦ Elaborate and understand studies through statistical analysis
- ♦ Delve into the concepts of care management and research methodology
- ♦ Analyze the evolution of Cardiac Surgery and its future perspectives

**Module 10. Clinical Presentation of Coronary Syndromes (SCA) and Classification NSTEMI-ACS 1: Epidemiology, Pathophysiology and Classification**

- ♦ Recognize the various clinical manifestations of coronary artery disease
- ♦ Classify acute coronary syndromes and their reasons
- ♦ Adapt the epidemiology and the different clinical presentations of SCASET
- ♦ Perform an in-depth study of the different electrocardiographic manifestations of NSTEMI-ACS
- ♦ Stratify patients by thrombotic and hemorrhagic risk to individualize their treatment
- ♦ Delve into variant angina and coronary vasospasm as a cause of ACS

**Module 11. NSTEMI-ACS 2: Imaging and Ischemia Detection Tests**

- ♦ Correctly evaluate patients with chest pain in the emergency department and the value of chest pain units
- ♦ Assess the use of transthoracic ultrasound at the bedside in patients with chest pain
- ♦ Master the use of ergometry and stress echo in the assessment of the patient with chest pain
- ♦ Internalize the use of CT in the triple rule-out (coronary artery disease, aortic dissection and coronary artery disease) of chest pain
- ♦ Recognize the usefulness of MRI in patients with chest pain and the value of imaging tests in general in the long-term follow-up of these patients

**Module 12. NSTEMI-ACS 3: Medical and Revascularization Treatment**

- ♦ In-depth study of the different types of drugs used in the treatment of NSTEMI-ACS, which ones to use and for how long, with the exception of lipid-lowering drugs, which are reviewed in the prevention module
- ♦ Advise on the indications for revascularization of the patient with NSTEMI-ACS
- ♦ Control the different forms of revascularization possible and their respective advantages and disadvantages
- ♦ Master percutaneous revascularization techniques
- ♦ Master the techniques of surgical revascularization

**Module 13. NSTEMI-ACS 13: Clinical Picture, Presentation and Pre-Hospital and Emergency Assessment**

- ♦ Develop knowledge in the different clinical presentations of NSTEMI-ACS
- ♦ Assess the patient with NSTEMI-ACS in the phase prior to arrival at the hospital
- ♦ Understand the electrocardiographic manifestations of this condition, its possible differential diagnoses and the evolutionary pattern over time
- ♦ Assess general treatment measures and initial monitoring and pharmacological treatment, as well as which treatments should not be used
- ♦ Internalize the importance of the decision of coronary reperfusion and activation of infarction code programs and the importance of timing and delays in this process

#### **Module 14. NSTEMI-ACS 14. Patient Management in the Hospital. Coronary Unit**

- ♦ Acquire extensive knowledge of the usefulness of the Coronary Units in the prevention and early treatment of the complications of NSTEMI-ACS
- ♦ Recognize the antianginal, lipid-lowering and antithrombotic treatment to be implemented in patients with NSTEMI-ACS
- ♦ Understand the most frequent mechanical complication of this entity, CHF, from the mechanistic, treatment and prognostic point of view
- ♦ Identify the rest of the potential mechanical complications (cardiac rupture, VSD and MI) and their incidence, treatment and prognosis

#### **Module 15. NSTEMI-ACS 3: TTE and Other Imaging Tests in Acute Patient Assessment and in the Hospital Phase**

- ♦ Monitor the usefulness of imaging techniques in the evaluation of patients with NSTEMI-ACS with suspected mechanical complications
- ♦ Monitor the usefulness of imaging techniques in the prognostic assessment of the patient with long-term NSTEMI-ACS
- ♦ Understand the new echocardiographic parameters that may be useful in the prognostic assessment of the patient
- ♦ Acquire in-depth knowledge of MINOCA, patients with ischemic myocardial damage, but without evidence of obstructive epicardial coronary artery disease

#### **Module 16. NSTEMI-ACS 4: Limitation of Infarct Size. Reperfusion Therapies**

- ♦ Recognize the time course of myocardial ischemic necrosis and understand the problem of ischemia time
- ♦ Assess the available strategies for reperfusion fibrinolysis and primary angioplasty, their advantages and disadvantages
- ♦ Control the necessary material and protocols to perform fibrinolysis or primary angioplasty
- ♦ Know in detail the anticoagulant and antiplatelet therapy in the catheterization laboratory
- ♦ Describe a protocol for antiplatelet treatment in patients who also need to take anticoagulant drugs
- ♦ Internalize hemodynamic support measures during primary angioplasty
- ♦ Control the usefulness of regional reperfusion networks in the treatment of infarction

#### **Module 17. ACS Secondary Prevention. Cardiac Rehabilitation Programs**

- ♦ Develop optimization in the long-term treatment of ACS
- ♦ Understand the most appropriate eating habits and management of obesity in patients with ACS
- ♦ Delve into the particularities of diabetic patients with ACS and specific treatment measures in this important group of patients
- ♦ Understand the utility and structure of Cardiac Rehabilitation programs
- ♦ Recognize the opportunities offered by telemedicine in Rehabilitation and specifically in its ambulatory phase



**Module 18. Arrhythmias. Fundamental Concepts**

- ♦ Understand the fundamental mechanisms that produce arrhythmias, including cellular physiology, the conduction system, cardiac anatomy of arrhythmias (including a radiological approach) and the role of genetics
- ♦ Review the common antiarrhythmic drugs, focusing on their most important indications, contraindications and common adverse effects
- ♦ Review basic diagnostic techniques and common procedures in the Electrophysiology room

**Module 19. Bradyarrhythmias**

- ♦ Know the definition and types of bradyarrhythmias, as well as their basic mechanisms
- ♦ Review the available studies for its diagnosis and characterization
- ♦ Delve into the fundamental groups of Bradyarrhythmias (sinus node disease and AV blocks), with special emphasis on diagnosis and treatment
- ♦ Perform an in-depth study of the patient with syncope, from mechanisms and causes, to diagnosis and treatment
- ♦ Review in detail the current indications for pacemaker implantation

**Module 20. Supraventricular Tachyarrhythmias**

- ♦ Know the definition and types of supraventricular tachyarrhythmias and understand the differential diagnosis between these types
- ♦ Understand the management of these arrhythmias in the acute (emergency) and chronic (consultation) setting
- ♦ Review the main aspects of the electrophysiological study of these arrhythmias
- ♦ Acquire extensive knowledge of the epidemiology, clinical presentation, characteristics of the electrophysiological study and ablation techniques in the 4 main types of supraventricular tachyarrhythmias (nodal reentrant tachycardia, AV reentrant tachycardia, common atrial flutter and focal atrial tachycardia)

**Module 21. Ventricular Tachyarrhythmias**

- ♦ Review the key aspects of its diagnostic process, with a clinical and electrocardiographic approach
- ♦ Review the electrocardiographic differential diagnosis between wide QRS tachycardias
- ♦ Know the approach to these arrhythmias in the acute (emergency) and chronic (consultation) patient setting
- ♦ Review the pharmacological treatment of these arrhythmia
- ♦ Delve into the specific electrophysiological study of these arrhythmias, as well as the therapeutic approach using ablation techniques
- ♦ Review the knowledge of ventricular extrasystoles, from their mechanisms and initial approach, to therapeutic strategies, including the specific electrophysiological study

**Module 22. Devices (Pacemaker, ICD and Resynchronizer)**

- ♦ Review in detail the indication of pacemakers, their implantation technique, their basic operation, as well as the modes of programming and other aspects of follow-up
- ♦ Review in detail the indication for ICD, as well as the particularities of the implantation technique, operation and programming/monitoring
- ♦ Know the differential aspects of the novel physiological stimulation techniques, as well as their current indications and future perspectives
- ♦ Learn about other current implantable devices: wireless pacemakers and subcutaneous ICDs and review their indications
- ♦ Gain up-to-date knowledge on the electrode extraction technique and its indications

### Module 23. Atrial Fibrillation

- ♦ Review the importance of atrial fibrillation: epidemiology and socioeconomic impact
- ♦ Review the main clinical aspects and the initial diagnostic approach
- ♦ Provide a detailed update on the complete management of atrial fibrillation, starting with the prevention of thromboembolism and continuing with the clinical management strategy
- ♦ Acquire knowledge of the ablation technique of atrial fibrillation: indication, evidence, technique and expected results Review the future of this technique
- ♦ Review the particularities of AF in other specific contexts and anticoagulation therapy in the patient with ischemic heart disease

### Module 24. Arrhythmias and Heart Failure

- ♦ Review the importance of rhythm disorders in heart failure
- ♦ Know in depth the importance of the AF-Heart Failure relationship, from its epidemiology to its prognostic implication
- ♦ Review the role of antiarrhythmic drugs, and especially ablation, in the management of AF in patients with heart failure
- ♦ Gain up-to-date knowledge on the assessment of ventricular arrhythmias in heart failure, deepening the role of genetics and MRI
- ♦ Review the current indications for CRS therapy and other devices in HF
- ♦ Learn about the novel aspects of physiological stimulation therapies
- ♦ Review the concept of Tachycardiomyopathy with a broad approach, including its epidemiology, diagnosis and treatment, both pharmacological and electrophysiological



### Module 25. Arrhythmic Syndromes, Sudden Cardiac Death and Channelopathies

- ♦ Have an in-depth knowledge of Sudden Cardiac Death: concept, epidemiology, causes, diagnostic study and clinical management
- ♦ Review the concept of channelopathies and their epidemiology
- ♦ Review the fundamental aspects of the most frequent channelopathies: Brugada Syndrome and Long QT Syndrome
- ♦ Learn the role of genetics in these entities Review the indications for family studies and how to perform them

### Module 26. Mycardiopathies and Arrhythmias

- ♦ Review the general aspects of arrhythmias associated with cardiomyopathies
- ♦ Review the characteristics of the most frequent arrhythmias in dilated cardiomyopathy and arrhythmogenic dysplasia
- ♦ Delve into the prevention and management of ventricular arrhythmias, reviewing the indications for ICD in these pathologies
- ♦ Know the role of genetics in this context
- ♦ Review rhythm disorders associated with other less common cardiomyopathies

### Module 27. Arrhythmias in Other Clinical Contexts

- ♦ Review the most common arrhythmias in patients without heart disease and in athletes
- ♦ Review the most common arrhythmias in the critical cardiac patient Know their epidemiology, diagnosis and management
- ♦ Know in detail the therapeutic algorithm of arrhythmic storm
- ♦ Review the indications and technique of transient pacemaker implantation
- ♦ Review the most frequent arrhythmias in the non-cardiac critical patient, after cardiac surgery and after TAVI, with special attention to their management
- ♦ Carry out a general review of the most prevalent arrhythmias in patients with congenital heart disease, as well as their fundamental implications and particularities of management



*A program designed exclusively for medical professionals who, like you, are looking for a source of constant updating in their respective specialties"*



# 03 Skills

Thanks to this Advanced Master's Degree in Cardiac Medicine and Surgery, specialists will be able to perfect their medical skills and competencies and obtain a broad and up-to-date vision of the sector. This will boost your ability to manage patients with severe and rare clinical conditions, allowing you to treat them with confidence, knowing that you possess the knowledge you need to obtain successful results, and all based on the latest scientific evidence.





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*Learn the latest scientific details on the basic diagnostic techniques used in arrhythmias and delve into the common procedures for their application"*

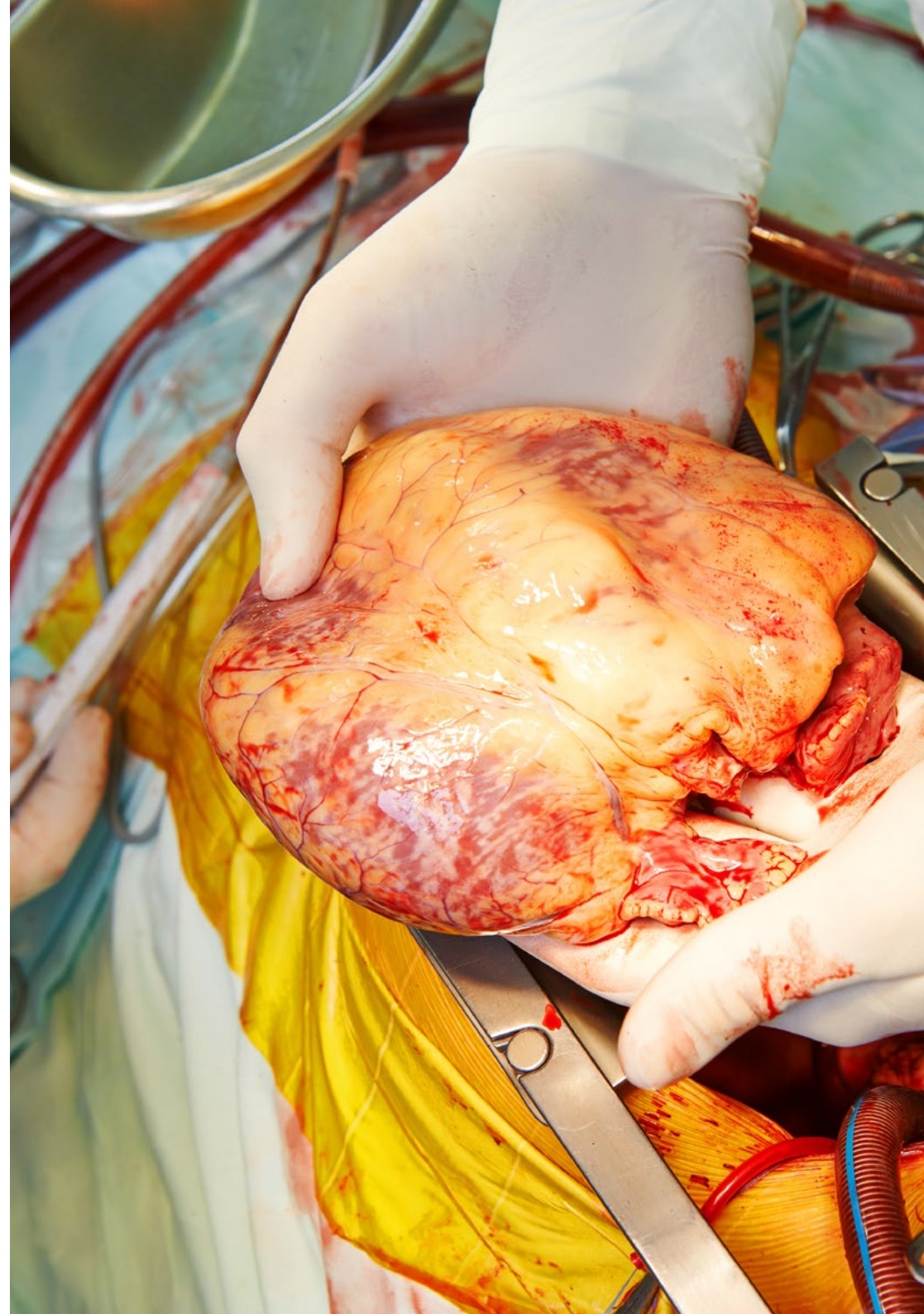




## General skills

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- ◆ Acquire in-depth knowledge that provides an opportunity in the context of Cardiac Surgery
- ◆ Apply acquired knowledge and problem-solving skills in large, solvent clinical settings
- ◆ Face complex clinical situations related to cardiac pathologies, including reflections related to the application of knowledge
- ◆ Communicate your findings to both specialized and non-specialized audiences in a clear and unambiguous manner
- ◆ Develop autonomously in a learning process with an innovative study methodology of advanced prestige and technology
- ◆ Have in-depth knowledge of Acute Coronary Syndrome (ACS) from its pathophysiology to its treatment and prevention
- ◆ Gain in-depth knowledge of the keys to clinical management of patients with ACS, both in the out-of-hospital and in-hospital setting
- ◆ Be able to adequately address the differential diagnosis of chest pain in the Emergency Room
- ◆ Be able to virtually attend revascularization procedures and how to implement cardiac prevention and rehabilitation programs
- ◆ Master the cardiac rhythm disorders that may present in a cardiology consultation or emergency room, from the healthy patient to patients with different types of heart disease
- ◆ Manage the latest advances in electroanatomical mapping systems
- ◆ Manage all types of devices, from conventional pacemakers, through novel physiological pacing to leadless pacemakers and subcutaneous ICDs
- ◆ Master patient management, both in the emergency and ward settings, as well as in the office setting, to the patient with specific pathologies such as Heart Failure, Cardiomyopathies or Arrhythmic Syndromes







## Specific skills

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- ♦ Create a global and up-to-date vision of Cardiac Surgery, acquiring a useful and deep knowledge.
- ♦ Approach all valvular pathologies from the surgical point of view
- ♦ Develop perioperative measures and strategies in surgical patients
- ♦ Master the new technologies implemented in Cardiac Surgery
- ♦ Generate interest to broaden knowledge in this area and discover its application to daily clinical practice
- ♦ Integrate less common aspects in Cardiac Surgery of great importance for the complete development of the specialty
- ♦ Approach different cardiac pathologies, as well as valvulopathies and ischemic cardiopathy and their surgical treatment
- ♦ Know the most relevant diagnostic techniques and therapeutic aspects in this field of medicine
- ♦ Create a global and up-to-date vision of Cardiac Surgery, acquiring a useful and deep knowledge
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- ♦ Generate interest to broaden knowledge in this area and discover its application to daily clinical practice
- ♦ Integrate less common aspects in Cardiac Surgery of great importance for the complete development of the specialty
- ♦ Approach different cardiac pathologies, as well as valvulopathies and ischemic cardiopathy and their surgical treatment
- ♦ Know the most relevant diagnostic techniques and therapeutic aspects in this field of medicine
- ♦ Understand the organization and operation of the Arrhythmia Units
- ♦ Know the role of electrophysiological study in the diagnosis and management of Bradyarrhythmias
- ♦ Know the techniques and procedures used in the diagnosis of supraventricular tachyarrhythmias, as well as the drugs indicated for their treatment
- ♦ Understand the concept of ventricular tachycardia, from the mechanism to the most frequent types
- ♦ Manage the theoretical foundations on which resynchronization therapy is based and review its current indications. Review the particularities of its implantation and the ways of programming and follow-up
- ♦ Review the current knowledge on the implications and management of AHREs and subclinical AF
- ♦ Know the fundamental aspects of ventricular dysfunction due to pacing and the relationship between LBBB and ventricular dysfunction
- ♦ Know the most prevalent tachyarrhythmias and conduction disorders in cardiac amyloidosis, as well as the particularities of their management
- ♦ Manage the current algorithms for out-of-hospital cardiac arrest care



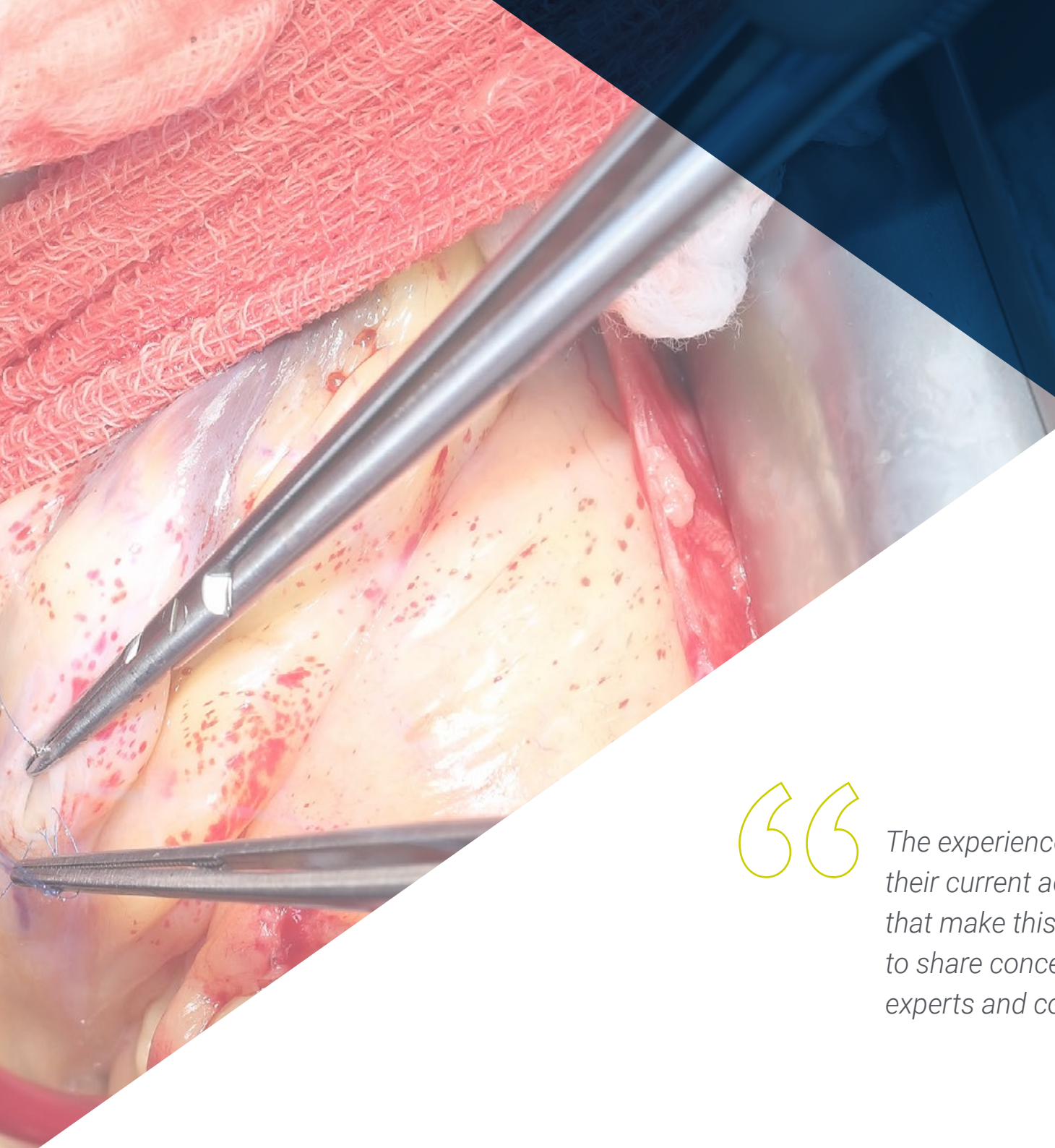
*The team of experts has prepared for you an up-to-date list of indications for which reperfusion therapies are recommended in the management of coronary patients"*

# 04

# Course Management

The management and teaching staff of this program is formed by a group of professionals who are specialized in the different branches of cardiology with extensive experience in the management of patients with various cardiac pathologies, both common and rare. However, this team has not only been chosen based on their professional profiles, but also for their human qualities and commitment to the profession - aspects that will be clearly reflected in the syllabus.





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*The experience of the teaching team and their current activity in the sector are factors that make this program a unique opportunity to share concerns about the specialty with experts and colleagues”*



## 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. Montepríncipe 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
- ♦ Attending Physician of Cardiovascular Surgery. Gregorio Marañón General University Hospital
- ♦ Attending Physician of Cardiovascular Surgery. Gómez Ulla Central de la Defensa Hospital
- ♦ Resident physician of the Cardiovascular Surgery, specialty in the Cardiovascular and Thoracic Surgery Service. Puerta de Hierro University Hospital. Madrid
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid
- ♦ Resident Medical Intern in the specialty of Cardiovascular Surgery in the Department of Cardiovascular and Thoracic Surgery, Puerta de Hierro Autonomous University Hospital of Madrid
- ♦ Diploma of Advanced Studies (DEA) of the Department of Surgery, Faculty of Medicine at the Complutense University of Madrid





### **Dr. Botas Rodríguez, Javier**

- ♦ Head of the Cardiology Service, Fundación Alcorcón University Hospital. Madrid
- ♦ Director of the Cardiac Catheterization Laboratory, Fundación Alcorcón University Hospital Madrid
- ♦ Cardiologist, Gregorio Marañón Hospital. Madrid
- ♦ Associate Professor of the Degree in Medicine at Rey Juan Carlos University, Madrid, since 2010
- ♦ Degree in Medicine and Surgery from the Faculty of Medicine at the Autonomous University of Madrid
- ♦ PhD in Medicine (Magna Cum Laude) from the Faculty of Medicine at the Autonomous University of Madrid
- ♦ Residency and specialization in Cardiology at the Gregorio Marañón University Hospital, Madrid
- ♦ Post-doctorate in Interventional Cardiology from Stanford University California



### **Dr. Jiménez Sánchez, Diego**

- ♦ Assistant specialist in Cardiology at El Escorial University Hospital
- ♦ Assistant specialist in the Arrhythmia Unit of the Puerta de Hierro University Hospital
- ♦ Degree in Medicine and Surgery from the Autonomous University of Madrid
- ♦ Specialist in Cardiology at the Puerta De Hierro University Hospital
- ♦ Master's Degree in Diagnostic and Therapeutic Cardiac Electrophysiology at San Pablo CEU University



### Dr. Vázquez López-Ibor, Jorge

- ◆ Area Specialist Physician at Escorial Hospital
- ◆ Area Specialist at the ICC Day Hospital, Puerta de Hierro Hospital, Madrid
- ◆ Degree in Medicine, Complutense University of Madrid
- ◆ Theoretical and practical Master in Critical and Advanced Heart Failure (MICCA) at the Gregorio Marañón Hospital
- ◆ Theoretical and practical training in cardiovascular research at the National Center for Cardiovascular Research
- ◆ Fellowship in advanced HF, cardiac transplantation and pulmonary hypertension at the Puerta de Hierro University Hospital



### Dr. Castro Urda, Víctor

- ◆ Area Specialist in the Cardiology Service of the Puerta de Hierro Hospital
- ◆ Degree in Medicine, Complutense University of Madrid
- ◆ Specialist in Cardiology at the Puerta De Hierro Hospital
- ◆ Stay at the Electrophysiology and Cardiology Department of the UZ Brussel Hospital, Belgium
- ◆ Master in Diagnostic and Therapeutic Cardiac Electrophysiology at the Complutense University of Madrid

## Professors

### Dr. Varela Barca, Laura

- ♦ Resident Intern at the Adult Cardiac Surgery Department of the Ramón y Cajal University Hospital of Madrid
- ♦ Assistant Physician of the Adult Cardiac Surgery Service of the Son Espases University Hospital of Palma de Mallorca
- ♦ Assistant Physician of the Cardiac Surgery Department of the Fundación Jiménez Díaz University Hospital
- ♦ PhD from the University of Alcalá de Henares in Health Sciences
- ♦ Master's Degree in Cardiovascular Emergencies, University of Alcalá de Henares
- ♦ Master's Degree in Cardiovascular Emergencies at the University of Alcalá de Henares

### Dr. Del Castillo Medina, Roberto

- ♦ Faculty Area Specialist of the Cardiology Service, University Hospital Fundación Alcorcón Madrid

### Dr. García Rodríguez, Daniel

- ♦ Cardiology Resident at the Puerta de Hierro University Hospital
- ♦ Participation in various cardiology research projects at Puerta de Hierro University Hospital
- ♦ Graduate in Medicine from the Autonomous University Madrid

### Dr. Domínguez Rodríguez, Fernando

- ♦ Specialist in Cardiology at the Puerta De Hierro University Hospital
- ♦ Clinical Research at the Puerta De Hierro University Hospital
- ♦ Degree in Medicine from the Complutense University of Madrid
- ♦ PhD in Medicine and Surgery from the Autonomous University of Madrid

### Dr. López Menéndez, José

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

### Dr. Pedraz Prieto, Álvaro

- ♦ Faculty Area Specialist in General Surgery, Gregorio Marañón General University Hospital
- ♦ Faculty Area Specialist in General Surgery Montepíncipe Hospital
- ♦ Collaborating Physician in the practical teaching of the Department of Surgery of the School of Medicine, Complutense University of Madrid
- ♦ 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

**Dr. Miguelena Hycka, Javier**

- ♦ Specialist in Adult Cardiac Surgery. Ramón y Cajal University Hospital
- ♦ Tutor of Surgical Residents, Ramón y Cajal University Hospital
- ♦ Lecturer in the Master's Degree in Cardiovascular Emergencies, University of Alcalá
- ♦ Lecturer in Master's Degree in pacemakers, resynchronizers and cardiac defibrillation, University of Alcalá
- ♦ PhD in Medicine and Surgery, University of Zaragoza
- ♦ Degree in Medicine and Surgery from the University of Zaragoza
- ♦ Master's Degree in Research Methodology in Health Sciences. Autonomous University of Barcelona
- ♦ Diploma in Design and Statistics in Health Sciences. Autonomous University of Barcelona
- ♦ Diploma of Advanced Studies, Faculty of Medicine University of Alcalá
- ♦ Specialization in Cardiovascular Surgery. Ministry of Health and Consumption

**Dr. Vaqueriza Cubillo, David**

- ♦ Faculty Area Specialist of Clinical Cardiology and Multidisciplinary Unit of Heart Failure, Infanta Leonor Hospital Madrid
- ♦ Specialist of the Cardiology Unit, Beata María Ana de Jesús Hospital, Madrid
- ♦ Degree in Medicine from the Complutense University of Madrid
- ♦ Resident in Cardiology at 12 de Octubre University Hospital. Madrid
- ♦ Online Master's Degree in Cardiology "Professor in Cardiology" by the Miguel Hernández University. Valencia

**Dr. De Cortina Camarero, Cristina**

- ♦ Cardiology Faculty Area Specialist, Hospital Infanta Leonor Madrid
- ♦ Assistant Medical Specialist in the Cardiology Service, Gregorio Marañón Hospital, Madrid
- ♦ Research Grant from the Noninvasive Cardiology Area of the Cardiology Service, Gregorio Marañón Hospital Madrid
- ♦ Degree in Medicine and Surgery at University of the Basque Country
- ♦ Residency and specialization in Cardiology at the Gregorio Marañón General University Hospital Madrid
- ♦ Doctorate in Cardiac Medicine at the Complutense University of Madrid

**Dr. Hernando Marrupe, Lorenzo**

- ♦ Faculty Area Specialist of the Cardiology Service, Alcorcón Foundation University Hospital Madrid
- ♦ Resident Cardiology Intern at the Cardiology Department, San Carlo Clinical Hospital . Madrid
- ♦ Fellowship of the Spanish Society of Cardiology for post-residency research training in Interventional Cardiology
- ♦ Degree in Medicine and Surgery from the University of Alcalá. Madrid
- ♦ PhD in Cardiology from the Complutense University of Madrid.
- ♦ Postgraduate Master's Degree in Acute Cardiac Care, San Antonio Catholic University and Spanish Society of Cardiology Murcia



**Dr. Pérez-Caballero Martínez, Ramón**

- ♦ Assistant of Children's Cardiovascular Surgery, Gregorio Marañón General University Hospital
- ♦ Assistant at the Children's Cardiovascular Surgery Unit (Dr. R. Greco), Sanitas La Zarzuela Hospital
- ♦ Assistant at the Children's Cardiovascular Surgery Unit (Dr. R. Greco), Sanitas La Moraleja Hospital
- ♦ Assistant at the Children's Cardiovascular Surgery Unit (Dr. R. Greco), Nisa Pardo de Aravaca Hospital
- ♦ Assistant at the Children's Cardiovascular Surgery Unit (Dr. R. Greco), Quirón Pozuelo Hospital
- ♦ Assistant in Children's Cardiac Surgery Pediatric Heart Institute, 12 de Octubre University Hospital
- ♦ PhD in Surgery from the Complutense University of Madrid
- ♦ Degree in Medicine and Surgery from the Faculty of Medicine, University of Santander, University of Cantabria
- ♦ Specialist in Cardiovascular Surgery, Gregorio Marañón General University Hospital
- ♦ Honorary Collaborator of the Department of Surgery I at the Complutense University
- ♦ Diploma of Advanced Studies. Synchronized ventricular assistance
- ♦ He has numerous publications in the area of cardiac surgery and transplantation in pediatrics.

**Dr. García Magallón, Belén**

- ♦ Specialist in Cardiology at the Puerta De Hierro University Hospital
- ♦ Cardiology Resident at the University Hospital of Guadalajara
- ♦ Degree in Medicine from the Catholic University
- ♦ Master's Degree in Diagnostic Imaging in Cardiology at the Catholic University of Murcia

**Dr. Campuzano Ruíz, Raquel**

- ♦ Head of Cardiac Rehabilitation. Cardiology Service, Alcorcón Foundation University Hospital. Madrid
- ♦ President Elect of the Cardiovascular Risk and Cardiac Rehabilitation Section of the Spanish Society of Cardiology
- ♦ Coordinator of the Master in Cardiovascular Prevention and Cardiac Rehabilitation, Menéndez Pelayo International University, Spanish Society of Cardiology
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid
- ♦ Master's Degree in Cardiology from the Spanish Society of Cardiology, Miguel Hernández University. Elche
- ♦ Doctor in the Official Postgraduate Program in Health Sciences at the Complutense University of Madrid, Alcalá University, Madrid

**Dr. Juárez Fernández, Miriam**

- ♦ Faculty Area Specialist of the Coronary Care Unit, Gregorio Marañón University Hospital Madrid
- ♦ Collaborating Doctor of Practical Teaching, Department of Medicine, Complutense University of Madrid
- ♦ Teacher of the Continuing Education Course "Practical Aspects in the Management of Atrial Fibrillation: Clinical Case Discussion"
- ♦ Degree in Medicine and Surgery from the Autonomous University of Madrid
- ♦ PhD at the Faculty of Medicine from the Complutense University of Madrid
- ♦ Speciality in Cardiology at the Gregorio Marañón General University Hospital. Madrid

#### **Dr. Martínez Losas, Pedro**

- ♦ Faculty Area Specialist of the Cardiology Service, Infanta Leonor University Hospital Madrid
- ♦ Fellow of the Ischemic Heart Disease and Acute Cardiovascular Care Section of the SEC, La Paz University Hospital. Madrid
- ♦ Degree in Medicine from the University of Alcalá de Henares. Madrid
- ♦ Specialist in Cardiology at the San Carlos Clinical Hospital in Madrid
- ♦ Sub-specialty in Acute Cardiac Care with a training grant from the SEC in the Acute Cardiovascular Care Unit at La Paz University Hospital Madrid
- ♦ Expert in Atrial Fibrillation from the University of Santiago de Compostela. Galicia

#### **Dr. Pastor Fuentes, Agustín**

- ♦ Faculty Area Specialist in Cardiology Head of Clinical and Interventional Cardiology Section, University Hospital of Getafe Madrid
- ♦ Associate Professor of Medicine and Cardiology at the European University of Madrid
- ♦ Degree in Medicine from the University of Alicante. Valencia
- ♦ PhD in Medicine from the Complutense University of Madrid
- ♦ Master's Degree in Interventional Heart Rhythmia from the University of Alcalá Henares. Madrid

#### **Dr. González Manzilla, Ana**

- ♦ Assistant in Cardiology at the Gregorio Marañón University Hospital. Madrid
- ♦ Cardiovascular Disease Network Research, Gregorio Marañón Biomedical Research Foundation. Madrid
- ♦ Member of the Cardiovascular Research Network, Carlos III Health Institute. Madrid
- ♦ Degree in Medicine. from the University of Castilla La Mancha
- ♦ Resident in Cardiology at 12 de Octubre University Hospital. Madrid
- ♦ Doctorate in Risk Stratification in Acute Non-Massive Pulmonary Thromboembolism from the Complutense University of Madrid

#### **Dr. Martin, Miren**

- ♦ Cardiovascular Surgery Specialist. Ramón y Cajal University Hospital
- ♦ Resident Intern. Ramón y Cajal University Hospital
- ♦ PhD in Medicine and Surgery, University of the Basque Country
- ♦ Master's Degree in Minimally Invasive Cardiac Surgery. 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. Toquero Ramos, Jorge**

- ♦ Area Specialist in the Cardiology Service of the Puerta de Hierro Hospital, Madrid
- ♦ Graduate in Medicine and Surgery from the University of Valladolid
- ♦ Cum Laude Doctor in Medicine from the Autonomous University of Madrid
- ♦ Specialist in Cardiology through Residency post at the Puerta De Hierro Hospital of Madrid
- ♦ Fellowship in Clinical Electrophysiology at the Arrhythmia Unit of the Cardiovascular Center of OLV Aalst Hospital, Belgium
- ♦ Master's Degree in Diagnostic and Therapeutic Cardiac Electrophysiology at the Gregorio Marañón Hospital and Complutense University of Madrid

#### **Dr. García-Izquierdo Jaén, Eusebio**

- ♦ Area specialist in the Arrhythmia Unit of the Puerta de Hierro University Hospital
- ♦ Clinical Cardiologist at the Hospital La Luz - Quirónsalud in Madrid
- ♦ AORTASANA Project Clinical Researcher
- ♦ Degree in Medicine from the Complutense University of Madrid

**Dr. Aguilera Agudo, Cristina**

- ♦ Area Specialist in the Cardiology Service of the Puerta de Hierro Hospital. of Madrid
- ♦ Personal Physician of Continuous Care at the University Hospital of Guadalajara
- ♦ Degree in Medicine and Surgery at the University of Granada
- ♦ Postgraduate Certificate in Statistics in Health Sciences from the Autonomous University of Barcelona

**Dr. Cobo Marcos, Marta**

- ♦ Head of the Heart Failure Unit at the Puerta de Hierro Hospital
- ♦ Promoter and Coordinator of the working group on cardiorenal syndrome and treatment of congestion in heart failure of the Heart Failure Association of the Spanish Society of Cardiology
- ♦ Area Specialist in Cardiology at the Puerta de Hierro Hospital
- ♦ Area Specialist in Cardiology at the Carlos III Hospital and Carlos III Foundation Hospital Alcorcón
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid

**Dr. Vilches Soria, Silvia**

- ♦ Area Specialist at the Family Cardiopathies Unit of the Gregorio Marañón University Hospital
- ♦ Co-researcher in the national multicenter PACED project: Etiological diagnosis of advanced conduction disorders
- ♦ Clinical-Teaching Collaborator at the Autonomous University of Madrid
- ♦ Degree in Medicine from the Autonomous University of Madrid
- ♦ Degree in Medicine and Surgery from the Autonomous University of Madrid
- ♦ Specialist Via MIR in Cardiology at the Puerta De Hierro University Hospital

**Dr. Parra Esteban, Carolina**

- ♦ Area Specialist at the Acute Cardiac Care Unit of the Puerta de Hierro University Hospital
- ♦ Area Specialist in Cardiology at the Severo Ochoa University Hospital
- ♦ Lecturer in the Simulation Course on the Comprehensive Management of the Patient in Cardiogenic Shock organized by the Cardiology Department of the Puerta de Hierro University Hospital and the Foundation for Biomedical Research of the Puerta de Hierro University Hospital
- ♦ Degree in Medicine from the Autonomous University Madrid
- ♦ Specialist in Cardiology Via MIR at the Puerta De Hierro University Hospital

**Dr. Sánchez García, Manuel**

- ♦ Area Specialist in the Electrophysiology and Cardiac Stimulation Unit of the Cardiology Service of the University Health Care Complex of Salamanca
- ♦ General Cardiologist at the University Hospital El Escorial
- ♦ Cardiologist in Pacemaker, ICD and Tilt Test consultation at Montepríncipe Hospital, Madrid
- ♦ Degree in Medicine, Complutense University of Madrid
- ♦ Master's Degree in Diagnostic and Therapeutic Cardiac Electrophysiology at San Pablo CEU University

# 05

## Structure and Content

Developing this Advanced Master's Degree has been a real challenge for TECH and its team of experts, who, despite being experts in Cardiology, have had to carry out exhaustive research to shape a complete, comprehensive, up-to-date program that is adapted to the educational criteria that define and differentiate this university. Moreover, with an emphasis on the multidisciplinary factor that characterizes all the qualifications of this center, they have also included in their additional audiovisual material, a selection of research articles, dynamic summaries and complementary readings so that the graduate can take full advantage of this academic experience and delve into the aspects of the syllabus that are most relevant for their professional performance.







“

*You will master, in a very short time, the techniques of percutaneous and surgical revascularization based on the latest developments in cardiac surgery”*

## 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 ECC

- 2.1. The History of ECC
- 2.2. General Principles of the ECC
- 2.3. ECC Components
  - 2.3.1. Mechanical Pumps
  - 2.3.2. Oxygenators
  - 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. Methods of Myocardial Protection
  - 2.5.1. Basic Principles of Cardioplegia
  - 2.5.2. Types of Cardioplegia

- 2.6. Secondary Effects of ECC
  - 2.6.1. Coagulation Alterations
  - 2.6.2. Pulmonary Alterations
  - 2.6.3. Neurological Alterations
  - 2.6.4. Renal Alterations
  - 2.6.5. Inflammatory Response
- 2.7. Monitoring During ECC
  - 2.7.1. Cardiovascular Monitoring
  - 2.7.2. Safety Devices
  - 2.7.3. Heat Exchanger
  - 2.7.4. Blood Gases
  - 2.7.5. Pressure
  - 2.7.6. Brain Saturation
  - 2.7.7. Flows
- 2.8. Cannulation Techniques
  - 2.8.1. Types of Cannulas
  - 2.8.2. Access for Cannulation
  - 2.8.3. Special Situations
- 2.9. Cerebral Perfusion

## Module 3. Preoperative Care

- 3.1. Preoperative Optimization
  - 3.1.1. Risk Assessment
  - 3.1.2. Nutritional Status
  - 3.1.3. Anemia
  - 3.1.4. Diabetes Mellitus
  - 3.1.5. ATB Prophylaxis
- 3.2. Intraoperative
  - 3.2.1. Monitoring
  - 3.2.2. Anesthetic Induction and Maintenance
  - 3.2.3. Fluid Use
  - 3.2.4. Pulmonary Hypertension

- 3.3. Cardiovascular System
  - 3.3.1. Volemia and Contractility
  - 3.3.2. Postoperative AMI
  - 3.3.4. Cardiopulmonary Arrest and Cardiopulmonary Resuscitation
- 3.4. Low-Energy Expenditure Syndrome
  - 3.4.1. Monitoring and Diagnosis
  - 3.4.2. Treatment
- 3.5. Respiratory System
  - 3.5.1. Postoperative Changes in Pulmonary Function
  - 3.5.2. Ventilator Management
  - 3.5.3. Pulmonary Complications
- 3.6. Kidney Function
  - 3.6.1. Kidney Pathophysiology
  - 3.6.2. Predisposing Factors for Kidney Failure
  - 3.6.3. Prevention of Kidney Failure
  - 3.6.4. Treatment of Kidney Failure
- 3.7. Nervous System. Neurological Damage
  - 3.7.1. Types of Neurological Damage
  - 3.7.2. Risk Factors
  - 3.7.3. Etiology and Prevention
  - 3.7.4. Neuropathy in Critically Ill Patients
- 3.8. Hematologic Complications
  - 3.8.1. Postoperative Bleeding
  - 3.8.2. Diagnosis of Coagulopathies
  - 3.8.3. Prevention of Bleeding
  - 3.8.4. Treatment
- 3.9. Infections
  - 3.9.1. Pneumonia Associated with Mechanical Ventilation
  - 3.9.2. Infection of Surgical Wounds
  - 3.9.3. Infections Associated with Catheter Devices
  - 3.9.4. Antibiotic Prophylaxis
- 3.10. Optimization of Blood Derivative Transfusion

## Module 4. Ischemic Heart Disease

- 4.1. Myocardial Ischemia and Myocardial Infarction
  - 4.1.1. Pathophysiology of Atheromatous Plaque
  - 4.1.2. Angina
  - 4.1.3. AMI
- 4.2. Diagnosis
  - 4.2.1. Clinical symptoms
  - 4.2.2. Electrocardiographic Criteria
  - 4.2.3. Enzymatic Modifications
  - 4.2.4. Image
  - 4.2.5. Definition of AMI
- 4.3. Natural History and Prevention
  - 4.3.1. Mortality of AMI
  - 4.3.2. Prevention of Ischemic Heart Disease
- 4.4. Clinical Decisions
  - 4.4.1. Heart Team
  - 4.4.2. Analysis of Clinical Practice Guidelines
- 4.5. AMI Management
  - 4.5.1. AMI Code
  - 4.5.2. Thrombolytic Treatment
- 4.6. Percutaneous Treatment
  - 4.6.1. Complications
  - 4.6.2. Results
- 4.7. Surgical Management
  - 4.7.1. Grafts
  - 4.7.2. Anastomosis
  - 4.7.3. Without ECC
  - 4.7.4. MIDCAB

- 4.8. Surgical Complications from AMI
  - 4.8.1. Ischemic Mitral Insufficiency
  - 4.8.2. VIC
  - 4.8.3. Free Wall Breakage
  - 4.8.4. Ventricular Aneurysm
- 4.9. Combined Coronary Surgery
- 4.10. Relevant Studies in Ischemic Heart Disease

## Module 5. Valvular Pathology

- 5.1. Etiopathogenesis.
- 5.2. Valvular Heart Team Specific Units
- 5.3. Types of Valve Prostheses
  - 5.3.1. Historical Evolution of Valve Prostheses
  - 5.3.2. Mechanical Prostheses
  - 5.3.3. Biological Prostheses
  - 5.3.4. Homograft
  - 5.3.5. Xenografts
  - 5.3.6. Autografts
- 5.4. Mitral Valve
  - 5.4.1. Anatomy and Function
  - 5.4.2. Pathophysiology
  - 5.4.3. Replacement and Repair Techniques
- 5.5. Tricuspid Valve
  - 5.5.1. Anatomy and Function
  - 5.5.2. Pathophysiology
  - 5.5.3. Replacement and Repair Techniques
- 5.6. Aortic Valve
  - 5.6.1. Anatomy and Function
  - 5.6.2. Pathophysiology
  - 5.6.3. Replacement and Repair Techniques
- 5.7. Pulmonary Valve
  - 5.7.1. Anatomy and Function
  - 5.7.2. Pathophysiology
  - 5.7.3. Replacement and Repair Techniques

- 5.8. Minimally Invasive Surgery
- 5.9. Results of Valvular Surgery Research
- 5.10. Endocarditis
  - 5.10.1. Etiology
  - 5.10.2. Indications
  - 5.10.3. Risk Factors
  - 5.10.4. Treatment

## Module 6. Pathology of the Aorta

- 6.1. Anatomy and Function of the Aortic Root
- 6.2. Pathology and Treatment of the Aortic Root
- 6.3. Aneurysm of the Thoracic Aorta
  - 6.3.1. Etiopathogenesis
  - 6.3.2. Natural History
  - 6.3.3. Treatment
- 6.4. Thoracoabdominal Aneurysm
- 6.5. Acute Aortic Syndrome
  - 6.5.1. Classification
  - 6.5.2. Diagnosis
- 6.6. Surgical Treatment of Acute Aortic Syndrome
- 6.7. Adjuvant Techniques in the Surgical Treatment of Acute Aortic Syndrome
- 6.8. Surgery of the Aortic Arch
- 6.9. Percutaneous Treatment
- 6.10. Aortitis

## Module 7. Congenital Heart Disease

- 7.1. General Physiology of Congenital Heart Disease
  - 7.1.1. Major Syndromes
  - 7.1.2. Palliative Techniques
- 7.2. Patent Ductus Arteriosus
  - 7.2.1. Aortopulmonary Window
  - 7.2.2. Fistula of the Sinus of Valsalva
  - 7.2.3. Aortoventricular Tunnel

- 7.3. Obstructions to Systemic Flow
  - 7.3.1. Aortic Subvalvular Stenosis
  - 7.3.2. Aortic Valve Stenosis
  - 7.3.3. Supravalvular Aortic Stenosis and Aortic Coarctation
  - 7.3.4. Interruption of Aortic Arch
- 7.4. Atrial Septal Defect and Ventricular Septal Defect
  - 7.4.1. Atrioventricular Canal
  - 7.4.2. Truncus Arteriosus
- 7.5. Tetralogy of Fallot
  - 7.5.1. Pulmonary Atresia with VSD and MAPCAS
- 7.6. Transposition of the Main Arteries Double Outlet Right Ventricle
- 7.7. Hypoplastic Left Heart Syndrome
  - 7.7.1. Three-Stage Management of Uni-Ventricular Physiology
- 7.8. Pulmonary Venous Return Anomalies
  - 7.8.1. Total and Partial Anomalous Pulmonary Venous Return
  - 7.8.2. Heterotaxia
- 7.9. Congenitally Corrected Transposition of the Great Arteries
- 7.10. Vascular Rings. Coronary Abnormalities

## Module 8. Treatment of Other Cardiac Pathologies, Transcatheter Valve Implantation and Concomitant Conditions

- 8.1. Surgical Management of Cardiac and Great Vessel Trauma
  - 8.1.1. Blunt
  - 8.1.2. Open
- 8.2. Pericardial Diseases
  - 8.2.1. Pericardial Effusion and Tamponade
  - 8.2.2. Constrictive Pericarditis
  - 8.2.3. Cysts and Tumors
- 8.3. Cardiac Tumors
- 8.4. Pulmonary Embolism
  - 8.4.1. Pathophysiology, Prevention and Treatment
  - 8.4.2. Pulmonary Thromboendarterectomy
- 8.5. Ventricular Assists and ECMO

- 8.6. Cardiac Transplantation
  - 8.6.1. History of the Cardiac Transplantation
  - 8.6.2. Surgical Techniques.
  - 8.6.3. Donor and Recipient Selection
  - 8.6.4. Immunosuppression
- 8.7. Transcatheter Valvular Treatment of the Aortic Valve
- 8.8. Transcatheter Valvular Treatment of the Mitral Valve
  - 8.8.1. Transcatheter Mitral Valve Implantation
  - 8.8.2. Transapical Neo-String Implantation
- 8.9. Cardiac Surgery and Concomitant Diseases
  - 8.9.1. Preoperative Assessment
  - 8.9.2. Fragility for
  - 8.9.3. Renal Insufficiency
  - 8.9.4. Respiratory Failure
  - 8.9.5. Digestive Pathology
  - 8.9.6. Coagulation Disorders
  - 8.9.7. Pregnancy

## Module 9. New Technologies and Imaging Techniques Statistics

- 9.1. New Technologies in Cardiac Surgery
  - 9.1.1. New Polymer Prostheses
  - 9.1.2. Vest/Duragraft
  - 9.1.3. 3D Printing
  - 9.1.4. Augmented Reality
  - 9.1.5. Robotics
- 9.2. Transthoracic Echocardiography
- 9.3. Transesophageal Echocardiogram
- 9.4. Imaging Techniques in Cardiac Pathology
  - 9.4.1. Cardiac CT
  - 9.4.2. Cardioresonance
  - 9.4.3. Perfusion Studies
  - 9.4.4. PET/CT



- 9.5. Statistics I for Surgeons
  - 9.5.1. Sample Collection
  - 9.5.2. Graphic Representation
- 9.6. Statistics II for Surgeons
  - 9.6.1. Statistical Inference
  - 9.6.2. Proportion Comparison
  - 9.6.3. Comparison of Averages
- 9.7. Statistics III for Surgeons
  - 9.7.1. Regression Analysis
  - 9.7.2. Linear Regression
  - 9.7.3. Logistic Regression
  - 9.7.4. Survival Studies
- 9.8. Care Management
  - 9.8.1. Quality Criteria
  - 9.8.2. Records and Databases
  - 9.8.3. Criteria for the Timing of Cardiovascular Interventions
- 9.9. Research Methodology
  - 9.9.1. Design
  - 9.9.2. Ethics
  - 9.9.3. Critical Reading of Articles
  - 9.9.4. Evidence-Based Medicine
- 9.10. Past, Present and Future of Cardiovascular surgery

### **Module 10. Clinical Presentation of Coronary Syndromes (SCA) and Classification NSTEMI-ACS 1: Epidemiology, Pathophysiology and Classification**

- 10.1. Forms of Presentation of Coronary Heart Disease Chronic Coronary Syndromes And Acute
- 10.2. Operational Classification of ACS Based on ECG, NSTEMI-ACS1 Epidemiology
- 10.3. Pathophysiology and Correlation with Anatomic Pathology
- 10.4. Unstable Angina and Non-Q AMI, Clinical Features
- 10.5. ECG and NSTEMI-ACS
- 10.6. Complementary Diagnostic Laboratory Tests and RXT in NSTEMI-ACS
- 10.7. Risk Stratification, Thrombotic Risk Scales
- 10.8. Risk Stratification, Hemorrhagic Risk Scales
- 10.9. Variant Angina and Coronary Vasospasm Clinical Features
- 10.10. Vospasm Provocation Tests Treatment and Prognosis of Vasospasm

### **Module 11. NSTEMI-ACS 2: Imaging and Ischemia Detection Tests**

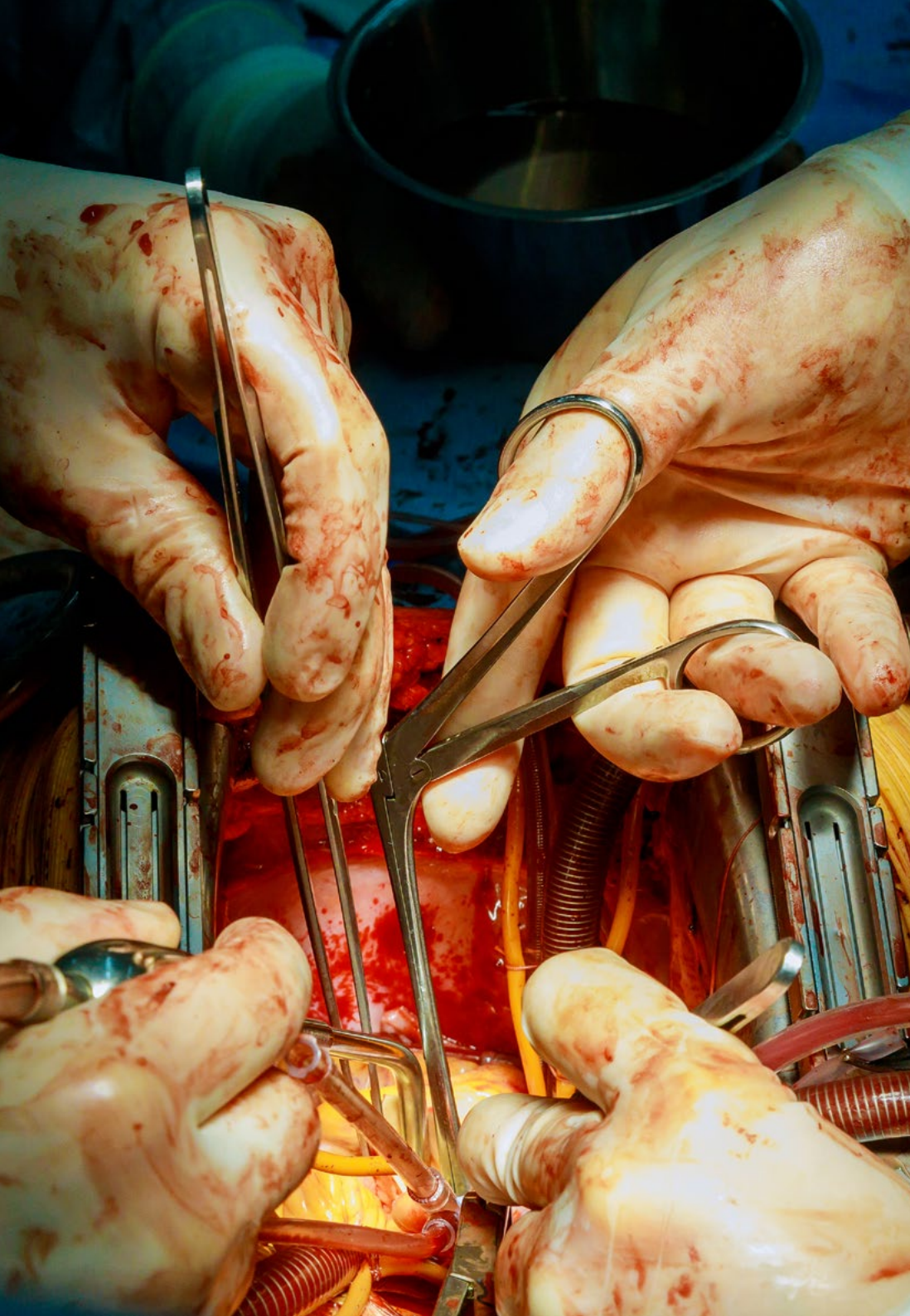
- 11.1. Differential Diagnosis of TD in the Emergency Department
- 11.2. Imaging Protocols in Emergency Department TD Units Assessment and Algorithm for the Diagnosis of Patients with TD in the Emergency Department
- 11.3. Value of Transthoracic Echocardiography in the Assessment of the Patient with Suspected NSTEMI-ACS Use of POCUS
- 11.4. Ergometry and Stress Echo/Stress Echo in the Patient with TD in the Emergency Department Indications and Technique
- 11.5. Role of MRI in NSTEMI-ACS and Patients with Chest Pain Indications and Technique
- 11.6. Anatomical Approach vs. Functional in the Diagnostic Assessment of the Patient with Chest Pain
- 11.7. Long-Term Follow-Up Using Imaging Techniques

### **Module 12. NSTEMI-ACS 3: Medical and Revascularization Treatment**

- 12.1. General and Monitoring Measures
- 12.2. Anti-Anginal Drugs: Beta Blockers
- 12.3. Anti-Anginal Drugs: Nitrates and Calcium Antagonists
- 12.4. Platelet Aggregation Inhibitors Which Ones and For How Long?
- 12.5. Anticoagulant Drugs Which Ones, How Much and Why?
- 12.6. Indications for Coronary Angiography and Revascularization
- 12.7. When Is Surgical Revascularization Indicated and When Is Percutaneous Revascularization Indicated?
- 12.8. Percutaneous Revascularization Techniques
- 12.9. Surgical Revascularization Techniques

### **Module 13. NSTEMI-ACS 13: Clinical Picture, Presentation and Pre-Hospital and Emergency Assessment**

- 13.1. Clinical Presentations of NSTEMI-ACS
- 13.2. Assessment of the Patient with NSTEMI-ACS in the Pre-Hospital Phase and in the Emergency Department (Clinical and Physical Examination) Initial Risk Stratification
- 13.3. ECG in the Acute Phase of NSTEMI-ACS and Correlation with Coronary Anatomy
- 13.4. ST-Elevation ECG: Differential Diagnosis
- 13.5. Evolving ECG Pattern in NSTEMI-ACS
- 13.6. General Treatment Measures and Initial Monitoring, Why Is It Important?
- 13.7. Initial Pharmacological Treatment of NSTEMI-ACS: Oxygen Therapy, Nitrates, Beta-Blockers
- 13.8. Pre-Hospital Antithrombotic Therapy: When and with What?
- 13.9. Indications for Coronary Reperfusion: The Problem of Timing



#### Module 14. NSTEMI-ACS 14. Patient Management in the Hospital. Coronary Unit

- 14.1. Role of the Coronary Care Unit, the Value of Monitoring and General Early Treatment Measures
- 14.2. Patient Stratification and Risk Scales
- 14.3. Complementary Laboratory Tests
- 14.4. Lipid-Lowering Drugs and Treatment Goals
- 14.5. Antianginal Drugs in NSTEMI-ACS
- 14.6. Platelet Antiplatelet Aggregation in NSTEMI-ACS
- 14.7. Anticoagulation Indications Anticoagulants
- 14.8. Complications of NSTEMI-ACS: Chronic Heart Failure (CHF)
- 14.9. Complications of NSTEMI-ACS: Cardiogenic Shock, Medical Treatment and Mechanical Support
- 14.10. Mechanical Complications of NSTEMI-ACS: Cardiac Rupture, VSD and MI

#### Module 15. NSTEMI-ACS 3: TTE and Other Imaging Tests in Acute Patient Assessment and in the Hospital Phase

- 15.1. CXR in NSTEMI-ACS
- 15.2. Value of Transthoracic Echocardiography in the Patient with NSTEMI-ACS
- 15.3. Transthoracic Echocardiographic Assessment of Mechanical Complications of NSTEMI-ACS
- 15.4. Echocardiographic Assessment of the Patient with Heart Failure or Cardiogenic Shock
- 15.5. Usefulness of Imaging Techniques in the Prognostic Assessment of the Patient with NSTEMI-ACS Diagnostic Assessment of Residual Ischemia and Myocardial Viability
- 15.6. New Techniques for Myocardial Deformation in NSTEMI-ACS
- 15.7. MINOCA Causes and Prognosis
- 15.8. Usefulness of MRI in Patients With Myocardial Damage Without Epicardial Coronary Disease
- 15.9. Assessment of Myocardial Perfusion by Contrast Echocardiography and Correlation with Angiographic Findings

### Module 16. NSTEMI-ACS 4: Limitation of Infarct Size Reperfusion Therapies

- 16.1. Myocardial Necrosis and Ischemia, the Problem of Ischemia Time
- 16.2. Strategies to Decrease Infarct Size: Fibrinolysis vs Primary Angioplasty
- 16.3. Fibrinolysis, Advantages, Disadvantages and Protocols
- 16.4. Primary Angioplasty Technique and Requirements
- 16.5. Stents: Types and Results Thrombus Extractors?
- 16.6. Antiplatelet and Anticoagulation Treatment During PCI
- 16.7. Long-Term Anti-Aggregation Treatment
- 16.8. The Problem of Antiplatelet Treatment in Patients Who Also Take Anticoagulant Drugs Protocols
- 16.9. Hemodynamic Support During Primary Angioplasty Available Methods and Results
- 16.10. Infarction Code Programs and Regional Reperfusion Networks

### Module 17. ACS Secondary Prevention. Cardiac Rehabilitation Programs

- 17.1. Optimization of Medical Treatment after ACS
- 17.2. Diet and Obesity Management
- 17.3. Prescription and Types of Exercise
- 17.4. Control of Arterial Hypertension before and after ACS
- 17.5. Dyslipidemia Control Before and After ACS
- 17.6. Smoking Control
- 17.7. Diagnosis and Management of Diabetes in Ischemic Heart Disease
- 17.8. Cardiac Rehabilitation Programs: Evidence, Phases, Components and Process of Care
- 17.9. Telemedicine in Cardiac Rehabilitation
- 17.10. Continuity of Care after ACS and Cardiac Rehabilitation PHASE III Cardiac Rehabilitation

### Module 18. Arrhythmias. Fundamental Concepts

- 18.1. Physiology
  - 18.1.1. Special Characteristics of Myocardial Cells
  - 18.1.2. Action Potential
  - 18.1.3. Main Ionic Currents Involved
- 18.2. Genetics of Arrhythmias
- 18.3. Cardiac Conduction System
  - 18.3.1. Sinus Node and AV Node
  - 18.3.2. His-Purkinje System
- 18.4. Arrhythmias Mechanisms
  - 18.4.1. Automatism
  - 18.4.2. Triggered Activity
  - 18.4.3. Re-Entry
  - 18.4.4. Micro-Entry
- 18.5. Antiarrhythmic Drugs
  - 18.5.1. Type I:
  - 18.5.2. Type I:
  - 18.5.3. Type III:
  - 18.5.4. Type IV:
- 18.6. Basic Diagnostic Techniques Used in Arrhythmias
  - 18.6.1. Holter
  - 18.6.2. Tilt Test
  - 18.6.3. Pharmacological Tests
  - 18.6.4. Insertable Holter
  - 18.6.5. Wearables and Other Devices
- 18.7. Common Procedures Performed for the Diagnosis and Treatment of Arrhythmias
  - 18.7.1. EEF and Ablation
  - 18.7.2. Electroanatomical Mapping Systems Browsers
- 18.8. Cardiac Anatomy Focused on Arrhythmias
- 18.9. Radiological Anatomy
- 18.10. Organization and Operation of Arrhythmia Units

## Module 19. Bradyarrhythmias

- 19.1. Bradyarrhythmia
- 19.2. Types of Bradyarrhythmias
- 19.3. Mechanisms/Physiopathology of Bradyarrhythmias
- 19.4. Diagnostic Studies for Bradyarrhythmias
- 19.5. Sinus Node Disease
- 19.6. AV Blockages
- 19.7. Syncope
  - 19.7.1. Causes of Syncope
  - 19.7.2. Syncope Mechanisms
  - 19.7.3. Diagnostic Study and Differential Diagnosis
- 19.8. Indication for Pacemaker Implantation Indications for Transient PM Implantation
  - 19.8.1. Sinus Dysfunction
  - 19.8.2. AV Blockages
- 19.9. EEF Study of Bradyarrhythmias

## Module 20. Supraventricular Tachyarrhythmias

- 20.1. Supraventricular Tachycardia
- 20.2. Types of Supraventricular Tachyarrhythmias Clinical Differential Diagnosis
- 20.3. Acute Management of Supraventricular Tachycardia. View from the Emergency Department
  - 20.3.1. Clinical Presentation
  - 20.3.2. Complementary Tests
  - 20.3.3. Therapeutic Maneuvers and Pharmacological Treatment
  - 20.3.4. Discharge Treatment
- 20.4. Chronic Management of Supraventricular Tachycardia View from the Consultation
- 20.5. Pharmacological Treatment of Supraventricular Tachycardias
- 20.6. Electrophysiological Study of Supraventricular Tachycardia
  - 20.6.1. Indications
  - 20.6.2. Description and Maneuvers
- 20.7. Nodal Reentrant Tachycardia
  - 20.7.1. Epidemiology
  - 20.7.2. Clinical Peculiarities
  - 20.7.3. Electrophysiological Study Findings
  - 20.7.4. Ablation

- 20.8. AV Reentrant Tachycardia (Accessory Pathway)
  - 20.8.1. Epidemiology
  - 20.8.2. Clinical Peculiarities
  - 20.8.3. Electrophysiological Study Findings
  - 20.8.4. Ablation
- 20.9. Common Atrial Flutter
  - 20.9.1. Epidemiology
  - 20.9.2. Clinical Peculiarities
  - 20.9.3. Electrophysiological Study Findings
  - 20.9.4. Ablation
- 20.10. Other Macroreentrant Tachycardias
- 20.11. Focal Atrial Tachycardia
  - 20.11.1. Epidemiology
  - 20.11.2. Clinical Peculiarities
  - 20.11.3. Electrophysiological Study Findings
  - 20.11.4. Ablation

## Module 21. Ventricular Tachyarrhythmias

- 21.1. Ventricular Tachycardias
  - 21.1.1. Mechanisms and Pathogenesis of Ventricular Tachycardias
  - 21.1.2. Types of Ventricular Tachycardias
- 21.2. Idiopathic Ventricular Tachycardia
- 21.3. Clinical and Electrocardiographic Diagnosis
- 21.4. Electrocardiographic Differential Diagnosis of Wide QRS Tachycardias
- 21.5. Acute Management of Ventricular Tachycardia. Vision from the Emergency Department and the Critically Ill Patient
  - 21.5.1. Clinical Presentation
  - 21.5.2. Complementary Tests
  - 21.5.3. Therapeutic Maneuvers and Pharmacological Treatment
  - 21.5.4. Discharge Treatment
- 21.6. Chronic Management of Ventricular Tachycardia View from the Consultation
- 21.7. Pharmacological Treatment of Ventricular Tachycardias
- 21.8. Electrophysiological Study and Ablation of Ventricular Tachycardia



- 21.9. Ventricular Extrasystole
  - 21.9.1. Mechanisms of Genesis of Ventricular Extrasystole
  - 21.9.2. Clinical Management
  - 21.9.3. Therapeutic Strategies
- 21.10. Ventricular Extrasystole Study and Ablation

## Module 22. Devices (Pacemaker, ICD and Resynchronizer)

- 22.1. Pacemakers
  - 22.1.1. How a Pacemaker Works
  - 22.1.2. Indications for Pacemaker Implantation
- 22.2. Technique for Pacemaker Implantation
  - 22.2.1. Venous Cannulation
  - 22.2.2. Making of Surgical Pocket
  - 22.2.3. Ventricular Electrode Implantation
  - 22.2.4. Atrial Electrode Implantation
- 22.3. Basic Programming of Pacemakers
  - 22.3.1. Post-Implant Discharge Programming
  - 22.3.2. Follow-Up Consultation Protocol
- 22.4. ICD
  - 22.4.1. Operation of an ICD
  - 22.4.2. Indications for ICD Implantation
- 22.5. ICD II
  - 22.5.1. ICD Implantation Technique Peculiarities with Respect to Pacemakers
  - 22.5.2. Post-Implant Discharge Programming
  - 22.5.3. Follow-Up Consultation Protocol
- 22.6. Resynchronization Therapy
  - 22.6.1. Theoretical Basis
  - 22.6.2. Indications for Cardiac Resynchronization Device Implantation

- 22.7. Resynchronization Therapy II
  - 22.7.1. CSR Implant Technique. Peculiarities with Respect to Other Devices
  - 22.7.2. Post-Implant Discharge Programming
  - 22.7.3. Follow-Up Consultation Protocol
- 22.8. Physiological Stimulation
  - 22.8.1. Hisian Stimulation
  - 22.8.2. Left Bundle Branch Stimulation
- 22.9. Other Implantable Devices
  - 22.9.1. Pacemaker without Wires
  - 22.9.2. Subcutaneous ICD
- 22.10. Electrode Removal
  - 22.10.1. Electrode Removal Indications
  - 22.10.2. Extraction Procedures

## Module 23. Atrial Fibrillation

- 23.1. Importance of Atrial Fibrillation
  - 23.1.1. Epidemiology of Atrial Fibrillation
  - 23.1.2. Socioeconomic Impact of Atrial Fibrillation
- 23.2. Atrial Fibrillation in the Clinic
  - 23.2.1. Clinical Presentation and Symptomatology
  - 23.2.2. Initial Diagnostic Study
- 23.3. Thromboembolic and Hemorrhagic Risk Assessment
  - 23.3.1. Anticoagulant Treatment. Clinical Evidence
  - 23.3.2. Direct Acting Anticoagulants
  - 23.3.3. Vitamin K Antagonists
  - 23.3.4. Earlobe Closure
- 23.4. Clinical Management of Atrial Fibrillation
  - 23.4.1. Frequency Control Strategy
  - 23.4.2. Rhythm Control Strategy

- 23.5. Atrial Fibrillation Ablation I
  - 23.5.1. Indications
  - 23.5.2. Evidence of Efficacy
- 23.6. Atrial Fibrillation Ablation II
  - 23.6.1. AF Ablation Techniques
  - 23.6.2. AF Ablation Results
  - 23.6.3. Possible Complications of AF Ablation
- 23.7. Follow-Up after Atrial Fibrillation Ablation
- 23.8. Future Prospects in Atrial Fibrillation Ablation
- 23.9. AF in Specific Contexts: Postoperative, Intracranial Hemorrhage, Pregnancy, Athletes, etc.
- 23.10. Anticoagulant Therapy in Patients with Ischemic Heart Disease
- 23.11. Implications and Management of AHREfs and Subclinical AF

## Module 24. Arrhythmias and Heart Failure

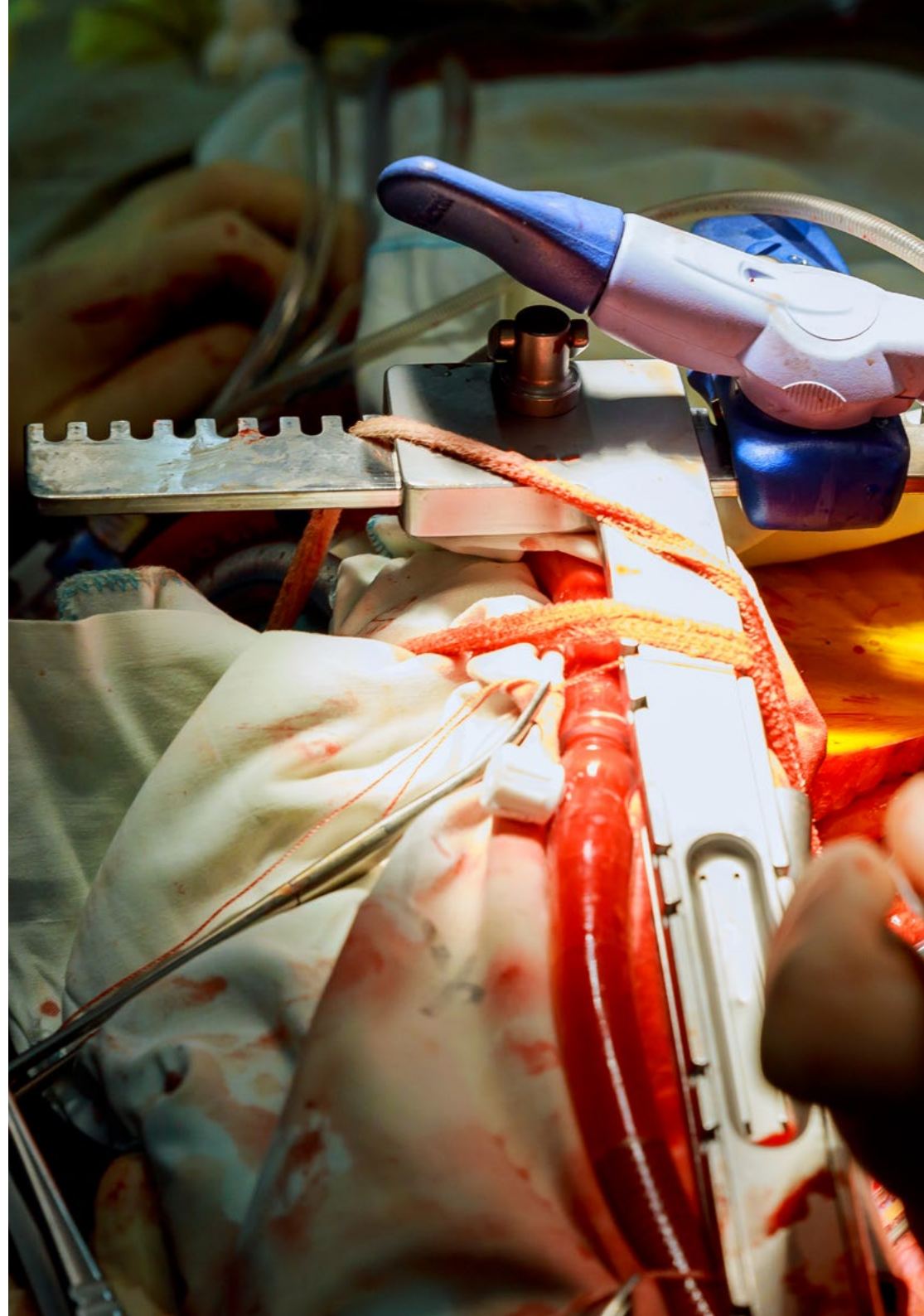
- 24.1. Importance of Rhythm Disturbances in Heart Failure
- 24.2. AF and Heart Failure
  - 24.2.1. Epidemiology of AF in HF in Heart Failure
  - 24.2.2. Prognostic Implication of the Presence of AF in Patients with Heart Failure
- 24.3. AF and Heart Failure Role of Ablation and Antiarrhythmic Drugs
- 24.4. Risk Assessment of Ventricular Arrhythmias in HF
  - 24.4.1. The Role of Stereotactic Body Radiotherapy RMN
  - 24.4.2. Role of Genetics
- 24.5. Management of Ventricular Arrhythmias in Heart Failure
- 24.6. Indications for CRS Therapy and Other Devices in the Context of Heart Failure
  - 24.6.1. Conventional Resynchronizer
  - 24.6.2. Physiological Stimulation (Hisian and Left Bundle Branch)
- 24.7. Tachycardiomyopathy
  - 24.7.1. Concept and Epidemiology
  - 24.7.2. Diagnostic Study
- 24.8. Management of a Patient with Tachycardiomyopathy
  - 24.8.1. Medical Treatment
  - 24.8.2. Indications and Ablation Approach
- 24.9. PM-Mediated Ventricular Dysfunction Prevalence and Management
- 24.10. LBBB and Ventricular Dysfunction Does Dyssynchronopathy Exist?

## Module 25. Arrhythmic Syndromes, Sudden Cardiac Death and Channelopathies

- 25.1. Sudden Cardiac Death
  - 25.1.1. Concept and Epidemiology of Sudden Cardiac Death
  - 25.1.2. Causes of Sudden Cardiac Death
- 25.2. Sudden Cardiac Death II
  - 25.2.1. Diagnostic Study after Recovered Cardiac Arrest
  - 25.2.2. Clinical Management. Prevention
- 25.3. Concept of Canalopathy Epidemiology
- 25.4. Brugada Syndrome
  - 25.4.1. Indications for Electrophysiological Study
  - 25.4.2. Indications of ICD
  - 25.4.3. Medical Treatment
- 25.5. Long QT Syndrome.
  - 25.5.1. Indications of AID
  - 25.5.2. Medical Treatment
- 25.6. Short QT Syndrome
  - 25.6.1. Indications of ICD
  - 25.6.2. Medical Treatment
- 25.7. Early Repolarization and CVPT
  - 25.7.1. Indications of AID
  - 25.7.2. Medical Treatment
- 25.8. The Importance of Genetics
  - 25.8.1. Family Studies

## Module 26. Mycardiopathies and Arrhythmias

- 26.1. Association of Cardiomyopathies and Arrhythmias
- 26.2. Dilated Cardiomyopathy
  - 26.2.1. Atrial Arrhythmias
  - 26.2.2. Ventricular Arrhythmias
- 26.3. Prevention of Arrhythmias and Sudden Cardiac Death in Dilated Cardiomyopathy
  - 26.3.1. Indications of AID
  - 26.3.2. Role of Genetics
- 26.4. Hypertrophic Cardiomyopathy Indications of ICD
  - 26.4.1. Atrial Arrhythmias
  - 26.4.2. Ventricular Arrhythmias
- 26.5. Prevention of Arrhythmias and Sudden Cardiac Death in Hypertrophic Cardiomyopathy
  - 26.5.1. Indications of ICD
- 26.6. Arrhythmogenic Cardiomyopathy
  - 26.6.1. Description
  - 26.6.2. Most Frequent Arrhythmias and Peculiarities in their Management
  - 26.6.3. Prevention of Sudden Death Indications of AID
- 26.7. Amyloidosis
  - 26.7.1. Description
  - 26.7.2. Most Frequent Arrhythmic Disorders and Peculiarities in their Management
  - 26.7.3. PM Indications
- 26.8. Other Cardiomyopathies and their Association with Cardiac Rhythm Disorders
  - 26.8.1. Dystrophies and Neuromuscular Diseases Indications for ICD and MP
- 26.9. Study of AVB in Young Patients
  - 26.9.1. Diagnostic and Therapeutic Algorithm





## Module 27. Arrhythmias in Other Clinical Contexts

- 27.1. Arrhythmias in the Population without Heart Disease
- 27.2. Arrhythmias in Athletes
- 27.3. Arrhythmias in the Critically Ill Cardiac Patient
  - 27.3.1. Epidemiology
  - 27.3.2. Study and Clinical Management
  - 27.3.3. Management of Arrhythmic Storm
  - 27.3.4. Transient Pacemaker Indications and Implantation Technique
- 27.4. Out-of-Hospital Cardiac Arrest Care
- 27.5. Arrhythmias in the Non-Cardiologic Critically Ill Patient
- 27.6. Arrhythmias in Patients Undergoing Cardiac Surgery and after TAVI
- 27.7. Arrhythmias in Congenital Heart Disease in Children
- 27.8. Arrhythmias in Congenital Heart Disease in In Adults

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*By enrolling in this Advanced Master's Degree you will not only be accessing the most comprehensive and up-to-date cardiac syllabus, but also the largest medical school in the world. Would you like to be part of it?"*



06

# 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.





# 07 Certificate

The Advanced Master's Degree in Cardiac Medicine and Surgery guarantees you, in addition to the most rigorous and up-to-date training, access to a Advanced Master's Degree issued by TECH Technological University.



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*Successfully complete this program  
and receive your university degree  
without travel or laborious paperwork”*

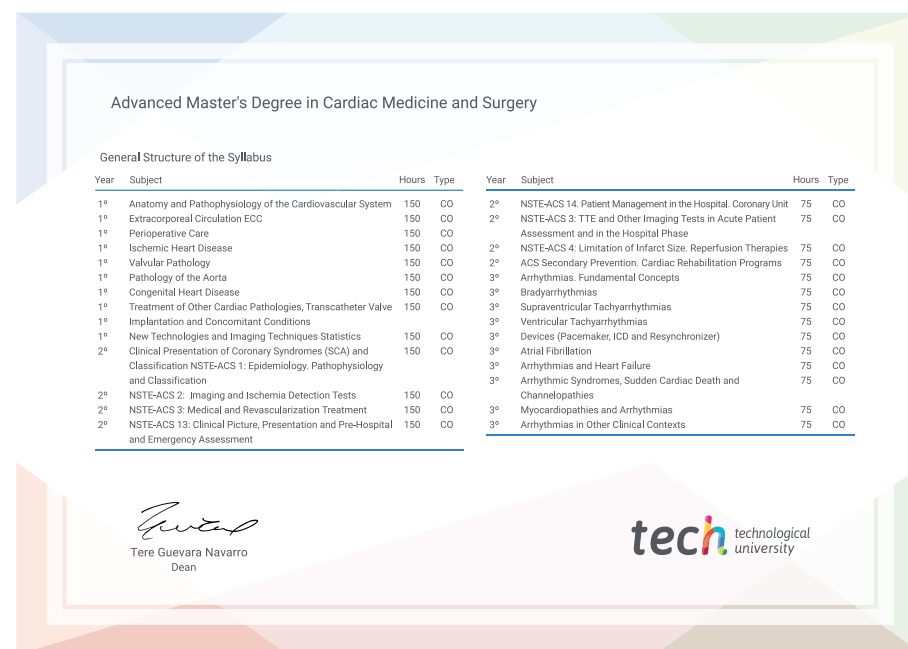
This **Advanced Master's Degree in Clinical Ultrasound for Nursing** contains the most complete and up-to-date scientific program on the market.

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

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

Title: **Advanced Master's Degree in Cardiac Medicine and Surgery**

Official N° of hours: **3,000 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.

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institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
online training  
development language  
classroom



Advanced Master's  
Degree  
Cardiac Medicine  
and Surgery

- » Modality: online
- » Duration: 2 years
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online



# Advanced Master's Degree Cardiac Medicine and Surgery