

Professional Master's Degree

Cardiac Surgery





Professional Master's Degree Cardiac Surgery

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: www.techtitute.com/in/medicine/professional-master-degree/master-cardiac-surgery

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Certificate

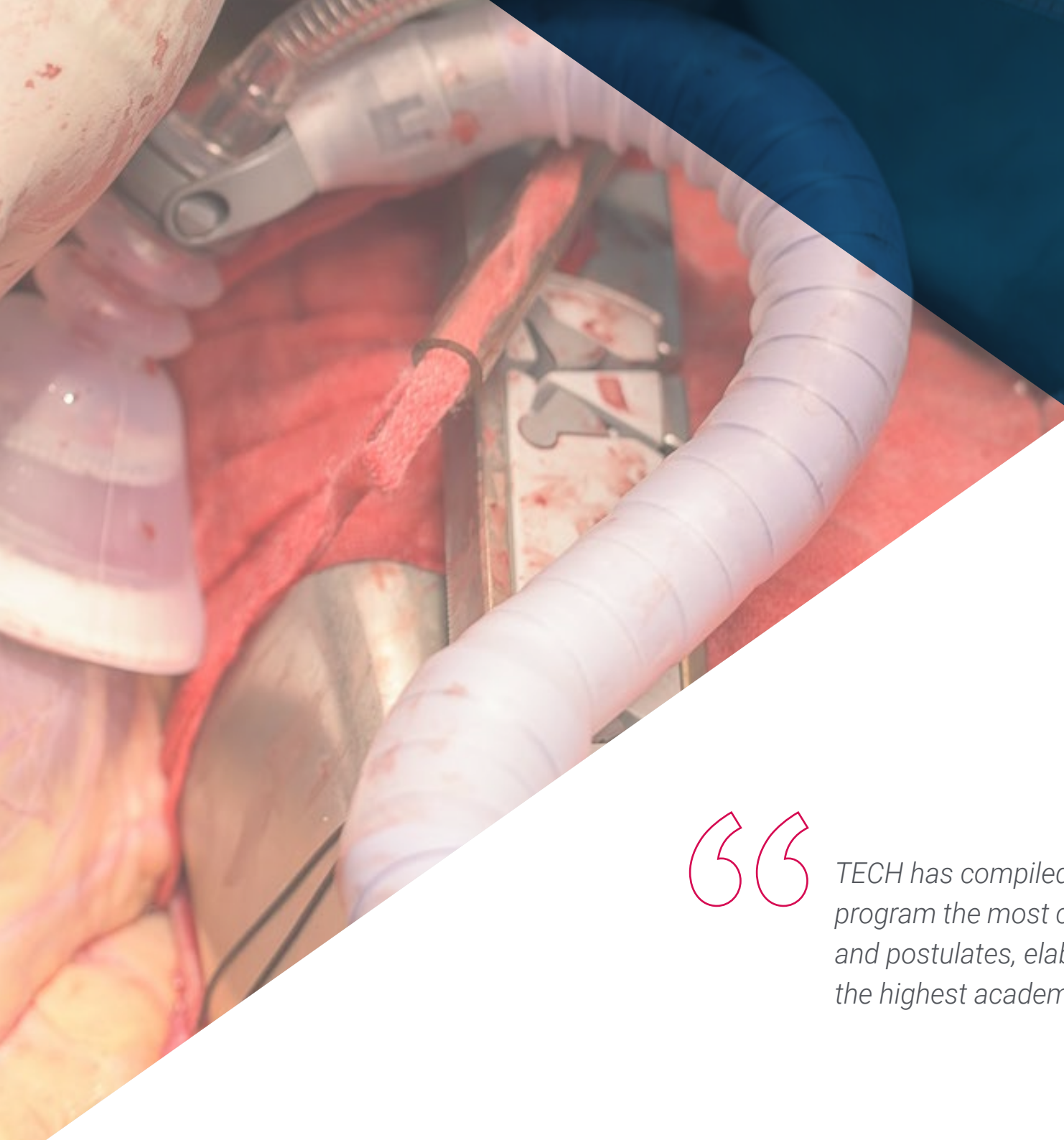
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01

Introduction

Heart disease is the leading cause of death in developed countries; therefore, cardiac surgery is of great importance to care for patients suffering from heart disease and to increasingly minimize these figures. From its beginnings to the present time, there have been innumerable advances and every day new procedures emerge that perfect the techniques and improve the development before, during and after the surgical processes. This is where the relevance of a correct and constant updating of cardiac surgeons who want to deepen or update themselves with the latest state-of-the-art techniques lies. In this program, the specialist will find everything necessary for this, with the most innovative study methodology based on *relearning*, the most rigorous content prepared by a teaching team of the highest academic level and a convenient teaching system 100% online.





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TECH has compiled in this complete university program the most current scientific developments and postulates, elaborated by a teaching team of the highest academic level. Enroll now”

Since the beginning of cardiac surgery almost 70 years ago, the evolution and development of surgical techniques, anesthesia and extracorporeal circulation have been of such magnitude that not even the most optimistic and imaginative could dream of what is being done today. This evolution in surgical and anesthetic techniques has been possible thanks to technological and pharmacological developments, but basically to the deepening of knowledge of the pathophysiological changes that occur in the different contexts of surgery, mainly during extracorporeal circulation.

This Professional Master's Degree in Cardiac Surgery focuses on providing the most advanced knowledge to be implemented both in the field of clinical practice management, as well as in the framework of daily activity, giving the possibility to streamline and maximize the ability to make decisions among the different possible alternatives and choose those that best meet the requirements of the cases presented. Therefore, the establishment of priorities and allocation of available resources must be carried out taking into account the most advanced scientific basis.

The program focuses on the study of all cardiac diseases from the anatomical and pathophysiological point of view, reviewing the latest developments in cardiovascular pharmacology, techniques and procedures; with the application of advanced technology before, during and after the surgical processes to avoid complications and raise the levels of success.

The specialist will study an up-to-date and detailed tour of the main areas of action in cardiac surgery taking into consideration the importance of joint decisions and the heart team to address the different strategies of medical, percutaneous and surgical treatment in valvular pathologies, ischemic and congenital heart disease; aortic pathologies. Similarly, review the electrophysiological basis of cardiac contraction and the rhythm disturbances that may result, as well as the surgical treatment alternatives in certain arrhythmias such as atrial fibrillation.

This, among other aspects developed in depth in the syllabus of this up-to-date program, which is taught in a 100% online format, for the flexibility and freedom of organization of the student, setting their own time and mode of study. Undoubtedly, an advantage for the most demanding schedules of the specialist at the present time, which allows an advance in their preparation and to obtain a new qualification in 12 months.

This **Professional Master's Degree in Cardiac Surgery** contains the most complete and up-to-date educational program on the market. Its most notable features are:

- ◆ Practical cases presented by experts in Cardiac 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 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



This program takes a look at the most innovative technologies implemented in Cardiac Surgery that are improving therapies"

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A high-level teaching team has designed this program, which brings a unique background to your professional profile"

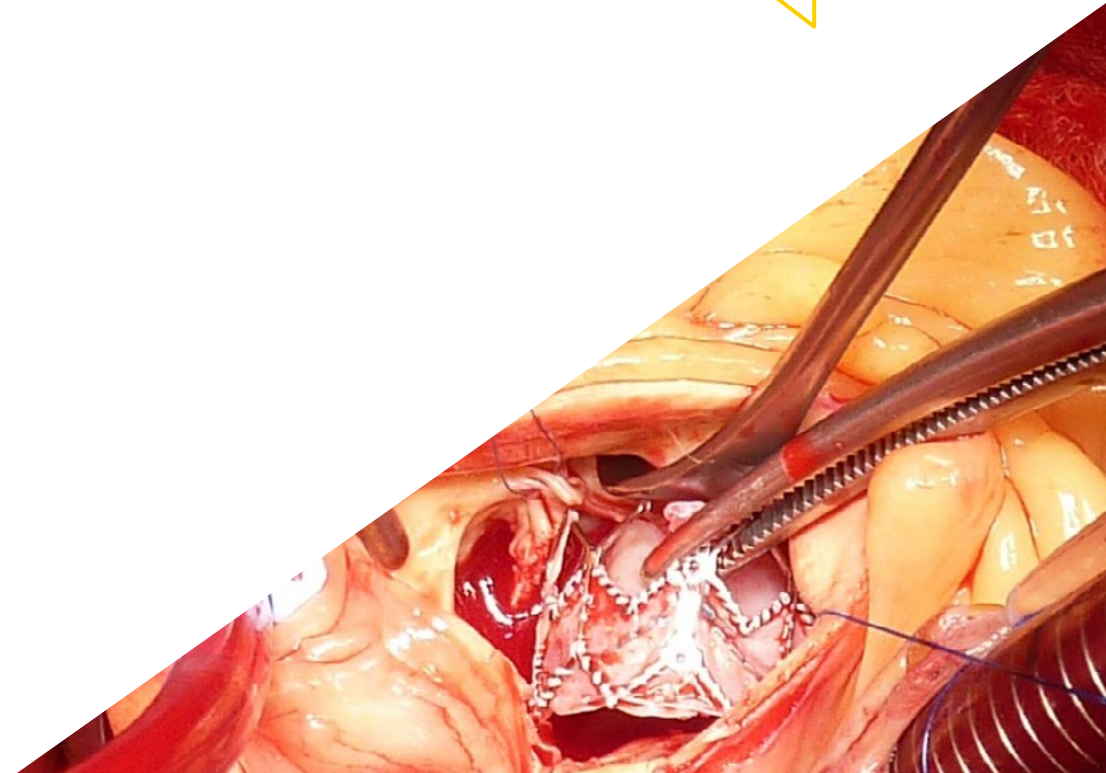
Add new procedures, techniques and proven scientific methods to your skills.

Access the most up-to-date content on the different heart diseases and their comprehensive approach.

The program's teaching staff includes professionals from the sector 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 immersive knowledge programmed to learn in real situations.

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



02 Objectives

Given the medical relevance of the topic of study, TECH has made every effort to ensure that this program provides an in-depth and accurate update on the most important issues for all Cardiac Surgery specialists. Therefore, both the contents and the exercises and supplementary material are focused on achieving a comprehensive, effective and deep update, with which the physician will modernize all their knowledge even before finishing the program.





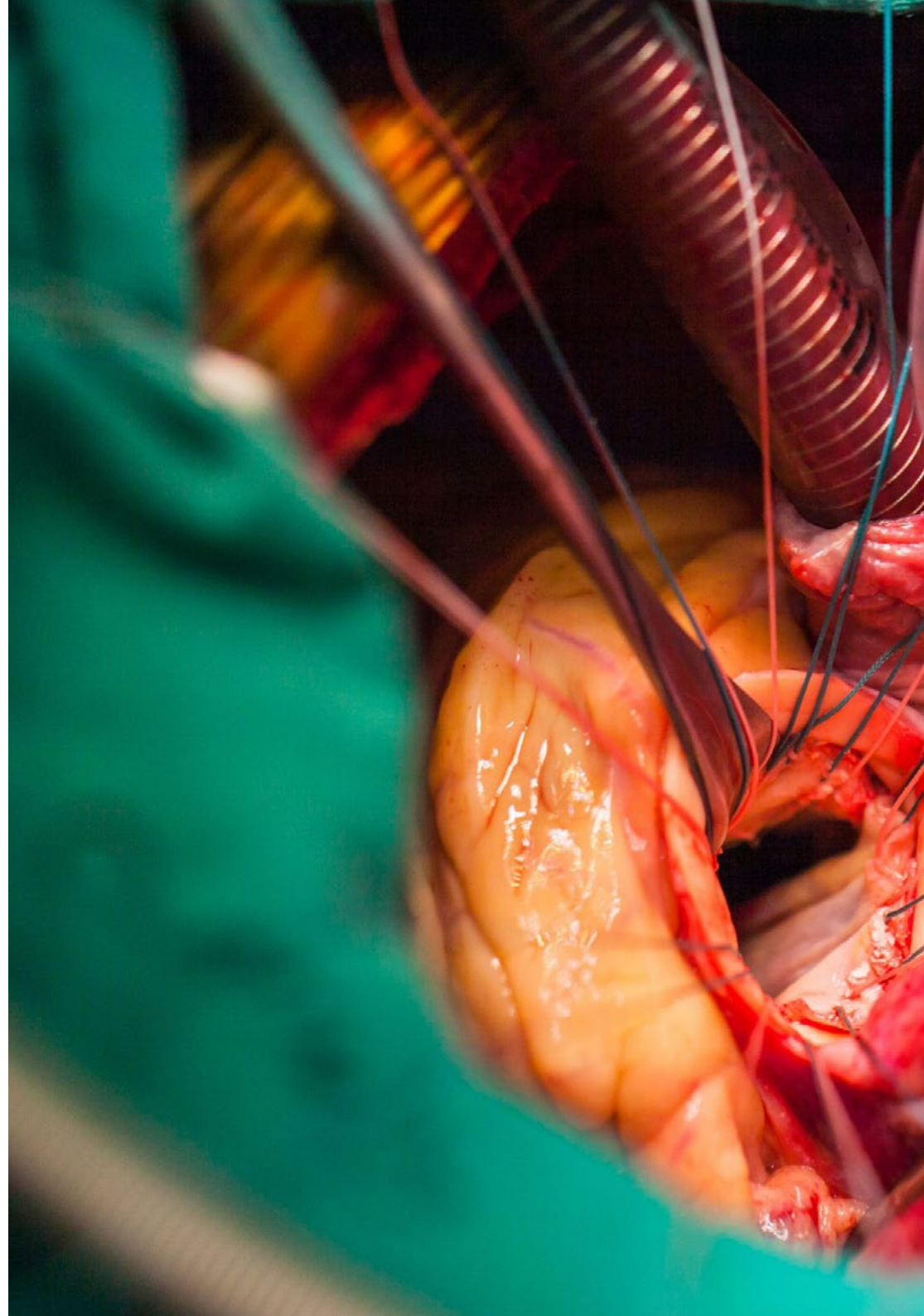
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You will achieve your updating objectives with the help of experts and the best study methodology”



General Objectives

- ◆ 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 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
- ◆ Learn about other cardiac pathologies, transcatheter valve implantation and concomitant diseases





Specific Objectives

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 from 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
- ◆ 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

- ◆ Deepen the knowledge of all perioperative measures and strategies
- ◆ Update monitoring techniques in the operating room
- ◆ Understand ways to improve for optimal recovery of the surgical patient
- ◆ 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
- ◆ A comprehensive approach to ischemic heart disease
- ◆ 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
- ◆ 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
- ◆ Deepen in 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. Aorta Pathology

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

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. Arrhythmias

- ◆ In-depth knowledge of the electrophysiological basis of cardiac contraction and rhythm disturbances
- ◆ Learn about the surgical treatment alternatives for certain arrhythmias such as atrial fibrillation
- ◆ Review the electrophysiological mechanisms involved in the genesis and propagation of the cardiac impulse
- ◆ Master the implantation and explantation techniques of cardiac electrostimulation devices
- ◆ Understand the implications of the use of cardiac electrostimulation devices
- ◆ Know the surgical technique for the treatment of atrial fibrillation and left atrial appendage closure

Module 9. Treatment of Other Cardiac Pathologies, Transcatheter Valve Implantation and Concomitant Conditions

- ◆ Study in depth the different cardiac pathologies and their surgical treatment
- ◆ Deepen knowledge about cardiac trauma and its surgical management
- ◆ Understand hereditary conditions such as Cardiomyopathies
- ◆ 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 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 10. 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
- ◆ Deepen the concepts of care management and research methodology
- ◆ Analyze the evolution of Cardiac Surgery and its future perspectives

03 Skills

The ultimate goal of this program is to provide surgical professionals with the latest knowledge on up-to-date processes in Cardiac Surgery, which will allow them to perform accurately and quickly in an field where seconds are crucial and every detail must be observed instantaneously. Graduates will be able to face complex clinical situations related to cardiac pathologies and provide their patients with expert care adapted to the most avant-garde discoveries and advances in this health branch.





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Thanks to this program you will be able to apply the knowledge of new technologies applied to extracorporeal circulation methods, to improve your professional practice"

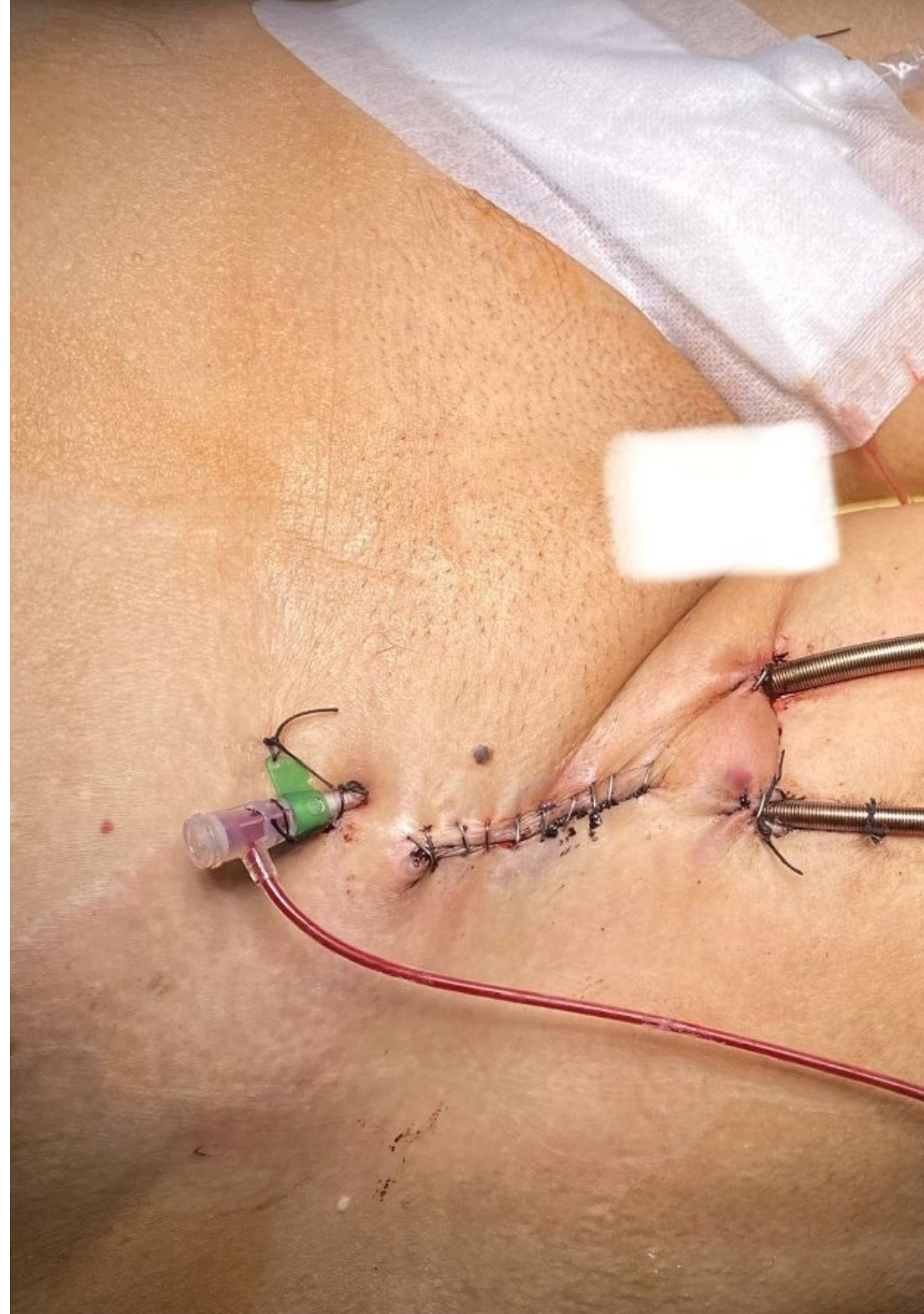


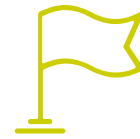
General Skills

- ◆ Acquire an 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

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The right decision at the right time requires a lot of observation and also updating of the latest cases presented. This program will allow you advance in your career efficiently”





Specific Skills

- ◆ 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 surgical patients
- ◆ 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

04

Course Management

With the premise of providing quality education to today's medical professionals, TECH has chosen the most distinguished physicians in the field of Cardiac Surgery to design this program and to be able to offer updates on the most advanced techniques. Considering their reputed experience, both work and teaching, this program's faculty is comprised of high-quality professionals, which has a multidisciplinary approach suitable for high-levels of demand, combining the most recent scientific theses and the most successful clinical practice.





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Leading Doctors in Cardiac Surgery will share their most outstanding knowledge and advanced techniques in ischemic heart disease complications"

Management



Dr. Rodríguez - Roda, Jorge

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

Professors

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. MIR 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

Dr. Martin, Miren

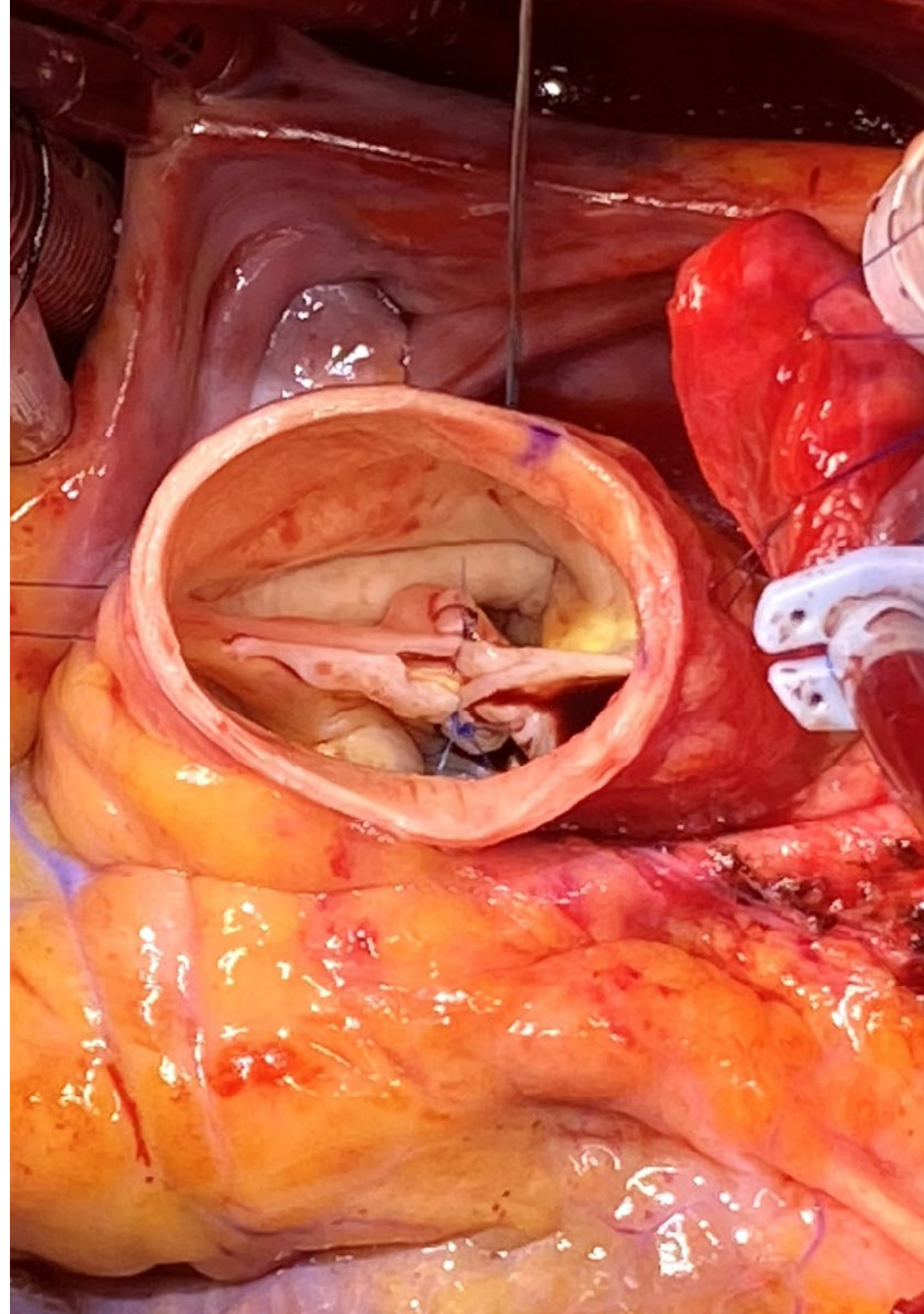
- ◆ Cardiovascular Surgery Specialist. Ramón y Cajal University Hospital
- ◆ Resident Intern. Ramón y Cajal University Hospital
- ◆ PhD in Medicine and Surgery University of the Basque Country
- ◆ Master in Cardiac Surgery Minimum access. University of Malaga
- ◆ Master's Degree in Cardiovascular Emergencies.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

Dr. Pedraz Prieto, Álvaro

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

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 Doce 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. 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 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. 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 - Alcalá de Henares University
- ◆ Master in Cardiovascular Emergencies at the University of Alcalá de Henares

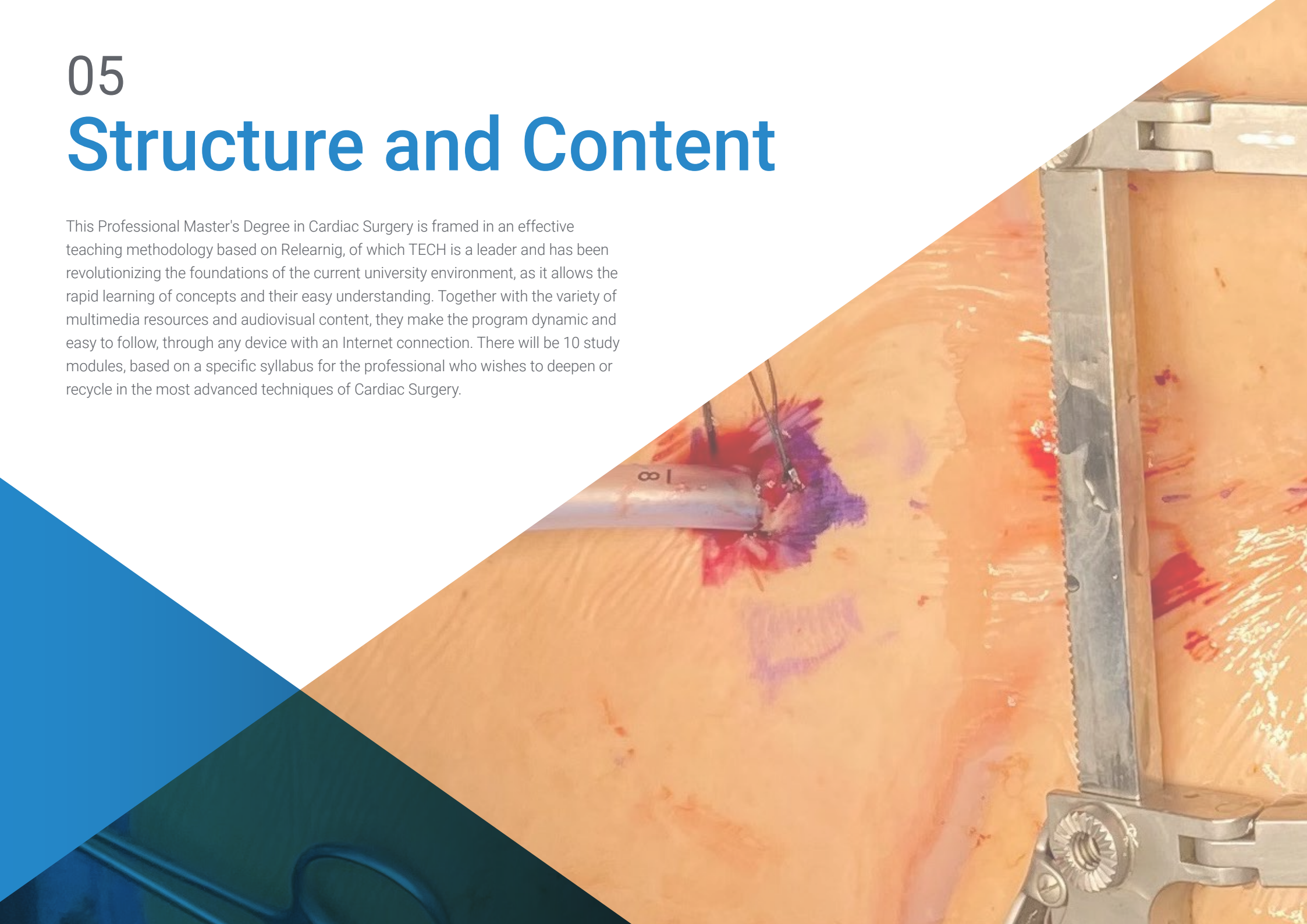


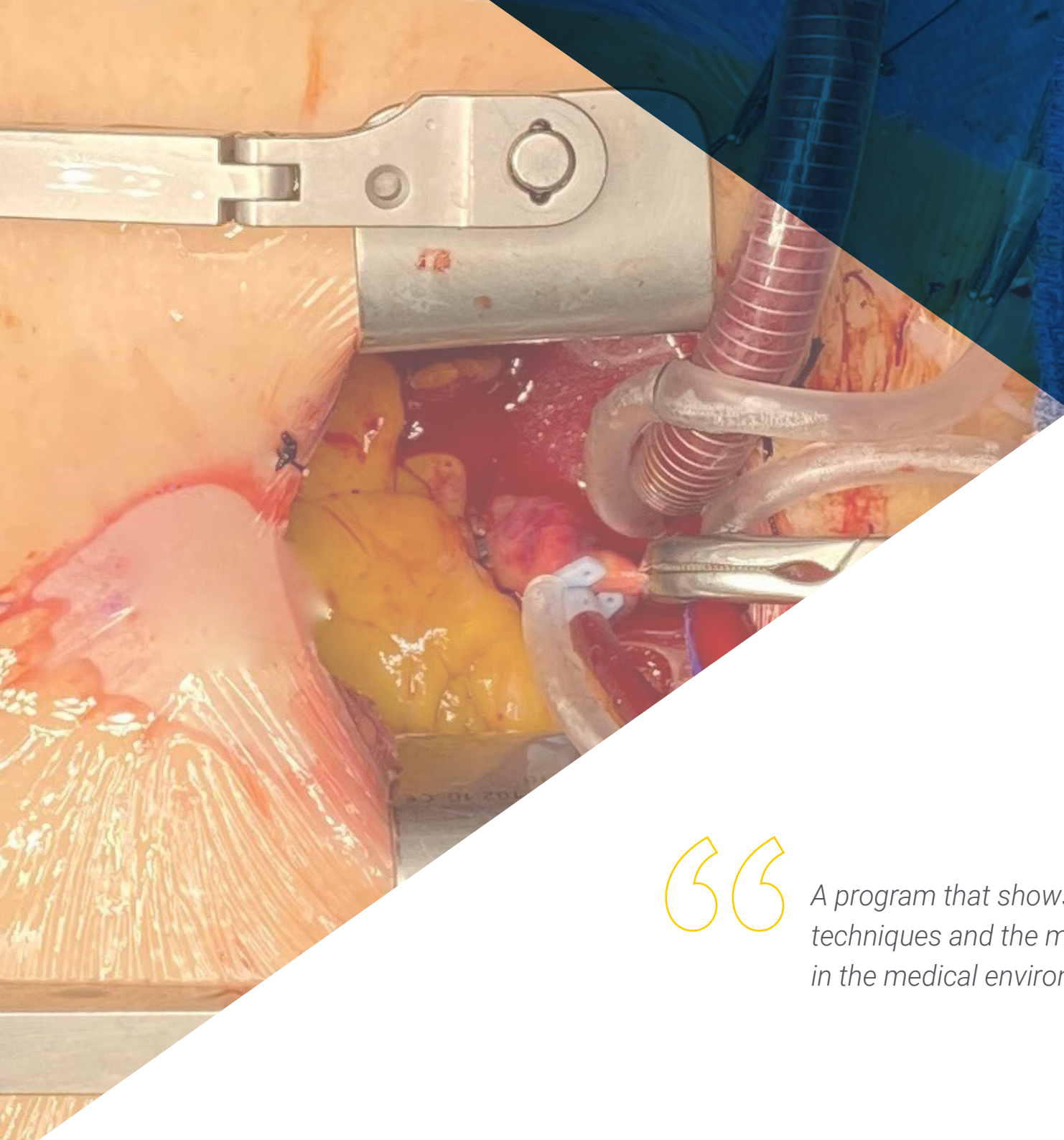
Make the most of this opportunity to learn about the latest advances in this subject to apply it to your daily practice"

05

Structure and Content

This Professional Master's Degree in Cardiac Surgery is framed in an effective teaching methodology based on Relearnig, of which TECH is a leader and has been revolutionizing the foundations of the current university environment, as it allows the rapid learning of concepts and their easy understanding. Together with the variety of multimedia resources and audiovisual content, they make the program dynamic and easy to follow, through any device with an Internet connection. There will be 10 study modules, based on a specific syllabus for the professional who wishes to deepen or recycle in the most advanced techniques of Cardiac Surgery.





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A program that shows you the most cutting-edge techniques and the most up-to-date procedures in the medical environment 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 Atrial Septum and Interventricular 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. Anatomophysiology 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 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 Hypothermia Techniques

- 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. Myocardial Protection Methods
 - 2.6.1 Basic Principles of Cardioplegia
 - 2.6.2 Types of Cardioplegia
- 2.7. Secondary Effects of ECC
 - 2.7.1 Coagulation Disorders
 - 2.7.2 Pulmonary Disorders
 - 2.7.3 Neurological Disorders
 - 2.7.4 Renal Disorders
 - 2.7.5 Inflammatory Response
- 2.8. Monitoring During ECC
 - 2.8.1 Cardiovascular Monitoring
 - 2.8.2 Safety Devices
 - 2.8.3 Pump Flows
 - 2.8.4 Blood Gases
 - 2.8.5 Heparinization
- 2.9. Cannulation Techniques
 - 2.9.1 Types of Cannulas
 - 2.9.2 Access for Cannulation
 - 2.9.3 Special Situations
- 2.10. Incidents in ECC

Module 3. Perioperative 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
 - 3.3.3 Arrhythmias
 - 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. Hematological 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. Clinical Manifestations of Myocardial Ischemia and Myocardial Infarction
 - 4.1.1 Coronary Circulation: Pathophysiology of Cardiac Ischemia
 - 4.1.2 Stable Angina
 - 4.1.3 Non-ST-Elevation Acute Coronary Syndrome (NSTEMI)
 - 4.1.4 ST-Elevation Acute Coronary Syndrome (STEMI)
- 4.2. Diagnosis
 - 4.2.1 Electrocardiographic Criteria
 - 4.2.2 Enzymatic Modifications
 - 4.2.3 Non-Invasive Imaging Techniques
 - 4.2.4 Stress Test: Myocardial Feasibility Studies
 - 4.2.5 Non-Invasive Imaging Techniques

- 4.3. Clinical Decisions
 - 4.3.1 Heart Team
 - 4.3.2 Complexity Assessment of Coronary Artery Disease and Surgical Risk
 - 4.3.3 Analysis of Clinical Practice Guidelines
 - 4.3.4 Decision on the Priority of Intervention
 - 4.3.5 Medical Treatment of Ischemic Heart Disease
- 4.4. Management and Treatment of NSTEMI/ACS
 - 4.4.1 The Heart Attack Code
 - 4.4.2 Thrombolytic Treatment
 - 4.4.3 Percutaneous Treatment
- 4.5. Technical Considerations in the Surgical Treatment of Ischemic Heart Disease I
 - 4.5.1 Cannulation: Exposure of the Coronary Arteries
 - 4.5.2 Types of Grafts: Graft Extraction
 - 4.5.3 Graft Configuration: Types of Anastomoses
 - 4.5.4 Compound Grafts
- 4.6. Technical Considerations in the Surgical Treatment of Ischemic Heart Disease II
 - 4.6.1 Non-ECC Surgery
 - 4.6.2 Flow Measurement of Coronary Grafts
 - 4.6.3 MIDCAB: TECAB. Robotics
 - 4.6.4 Results
- 4.7. Technical Considerations in the Surgical Treatment of Ischemic Heart Disease III
 - 4.7.1 Acute Ischemic Mitral Insufficiency
 - 4.7.2 Post-Infarction VSD
 - 4.7.3 Free Wall Breakage
 - 4.7.4 Ventricular Aneurysm
- 4.8. Technical Considerations in the Surgical Treatment of Ischemic Heart Disease IV
 - 4.8.1 Surgery for Chronic Ischemic Mitral Insufficiency
 - 4.8.2 Coronary Artery Surgery Combined with Peripheral Vascular Disease
 - 4.8.3 Coronary Surgery and Pre-Operative Antiplatelet Therapy

- 4.9. Cardiogenic Shock Management
 - 4.9.1 Medical Treatment
 - 4.9.2 IABP
 - 4.9.3 ECMO
 - 4.9.4 Ventricular Assistance Devices
- 4.10. Relevant Studies in Ischemic Heart Disease
 - 4.10.1 SYNTAX
 - 4.10.2 EXCEL and NOBLE: Left Main Coronary Artery Pathology
 - 4.10.3 ARTS Arterial Grafts
 - 4.10.4 FAME: Multivessels

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 Scores
 - 5.10.4 Treatment

Module 6. Aortic Pathology

- 6.1. Anatomy and Function of the Aortic Root
- 6.2. Pathology and Treatment of the Aortic Root
- 6.3. Thoracic Aortic Aneurysm
 - 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. Aortic Arch Surgery
- 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 Aorto-Ventricular 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 Interrupted 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 Univentricular 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. Arrhythmias

- 8.1. Cardiac Electrophysiology
 - 8.1.1 Cellular Electrophysiology
 - 8.1.1.1. Membrane Potential
 - 8.1.1.2. Ion Channels
 - 8.1.1.3. Action Potential
 - 8.1.1.4. GAP Junctions
 - 8.1.1.5. Cardiac Muscle Properties
 - 8.1.2 Classification and Mechanisms of Arrhythmias
- 8.2. 12-Lead Electrocardiogram: General Information for Its Correct Interpretation
- 8.3. Sudden Death of Cardiac Origin and Ventricular Tachycardia
 - 8.3.1 Associated Diseases
 - 8.3.2 Triggering Mechanisms: Patients at Risk
 - 8.3.3 Prevention
- 8.4. Tachyarrhythmias
 - 8.4.1 Atrial Fibrillation
 - 8.4.2 Flutter
 - 8.4.3 Supraventricular Tachycardias
- 8.5. Bradyarrhythmias
 - 8.5.1 Sinus Dysfunction
 - 8.5.2 Sinoatrial Block
 - 8.5.3 Atrioventricular Block
 - 8.5.4 Intraventricular Conduction Abnormalities
- 8.6. Electrostimulation Devices I
 - 8.6.1 Pacemakers
 - 8.6.2 Defibrillators
 - 8.6.3 Cardiac Resynchronization Therapy (CRT)
 - 8.6.4 Indications
- 8.7. Electrostimulation Devices II
 - 8.7.1 Implantation Techniques
 - 8.7.2 Complications

- 8.8. Removal of Electrostimulation Electrodes
- 8.9. Atrial Fibrillation Surgery
 - 8.9.1 Theoretical Principles and History
 - 8.9.2 Available Tools
 - 8.9.3 Surgical Technique
- 8.10. Left Atrial Appendage Closure
 - 8.10.1 Research: Prevail, Protect, Laos
 - 8.10.2 Percutaneous Closure
 - 8.10.3 Surgical Closure

Module 9. Treatment of Other Cardiac Pathologies, Transcatheter Valve Implantation and Concomitant Conditions

- 9.1. Surgical Management of Cardiac and Great Vessel Trauma
 - 9.1.1 Blunt
 - 9.1.2 Open
- 9.2. Cardiomyopathies
 - 9.2.1 Dilated Cardiomyopathy
 - 9.2.2 Hypertrophic Cardiomyopathy
 - 9.2.3 Restrictive Cardiomyopathy
- 9.3. Pericardial Diseases
 - 9.3.1 Pericardial Effusion and Tamponade
 - 9.3.2 Constrictive Pericarditis
 - 9.3.3 Cysts and Tumors
- 9.4. Cardiac Tumors
- 9.5. Pulmonary Embolism
 - 9.5.1 Pathophysiology, Prevention and Treatment
 - 9.5.2 Pulmonary Thromboendarterectomy
- 9.6. Ventricular Assists and ECMO
- 9.7. Heart Transplant
 - 9.7.1 History of Heart Transplant
 - 9.7.2 Surgical Techniques.
 - 9.7.3 Donor and Recipient Selection
 - 9.7.4 Immunosuppression

- 9.8. Transcatheter Valvular Treatment of the Aortic Valve
- 9.9. Transcatheter Valvular Treatment of the Mitral Valve
 - 9.9.1 Transcatheter Mitral Valve Implantation
 - 9.9.2 Transapical Neo-String Implantation
- 9.10. Cardiac Surgery and Concomitant Diseases
 - 9.10.1 Preoperative Assessment
 - 9.10.2 Fragility
 - 9.10.3 Renal Insufficiency
 - 9.10.4 Respiratory Failure
 - 9.10.5 Digestive System Pathology
 - 9.10.6 Coagulation Disorders
 - 9.10.7 Pregnancy

Module 10. New Technologies and Imaging Techniques Statistics

- 10.1. New Technologies in Cardiac Surgery
 - 10.1.1 New Polymer Prostheses
 - 10.1.2 Vest/Duragraft
 - 10.1.3 3D Printing
 - 10.1.4 Augmented Reality
 - 10.1.5 Robotics
- 10.2. Transthoracic Echocardiography
- 10.3. Transesophageal Echocardiogram
- 10.4. Imaging Techniques in Cardiac Pathology
 - 10.4.1 Cardiac CT
 - 10.4.2 Cardiac MRI
 - 10.4.3 Perfusion Studies
 - 10.4.4 PET/CT
- 10.5. Statistics I for Surgeons
 - 10.5.1 Sample Collection
 - 10.5.2 Graphic Representation

- 10.6. Statistics II for Surgeons
 - 10.6.1 Statistical Inference
 - 10.6.2 Proportion Comparison
 - 10.6.3 Comparison of Averages
- 10.7. Statistics III for Surgeons
 - 10.7.1 Regression Analysis
 - 10.7.2 Linear Regression
 - 10.7.3 Logistic Regression
 - 10.7.4 Survival Studies
- 10.8. Care Management
 - 10.8.1 Quality Criteria
 - 10.8.2 Records and Databases
 - 10.8.3 Criteria for the Timing of Cardiovascular Interventions
- 10.9. Research Methodology
 - 10.9.1 Design
 - 10.9.2 Ethics
 - 10.9.3 Critical Reading of Articles
 - 10.9.4 Evidence-Based Medicine
- 10.10. Past, Present and Future of Cardiovascular Surgery



You will be able to ask the teachers any questions you may have about the syllabus, with full and personalized assistance”

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.



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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. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in the physician's professional practice.

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

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

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



Relearning Methodology

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

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

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



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

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

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

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

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



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



Study Material

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

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



Surgical Techniques and Procedures on Video

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



Interactive Summaries

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

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



Additional Reading

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





Expert-Led Case Studies and Case Analysis

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



Testing & Retesting

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



Classes

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



Quick Action Guides

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



07 Certificate

The Professional Master's Degree in Cardiac Surgery guarantees you, in addition to the most rigorous and updated training, access to a Professional Master's issued by TECH Technological University.



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

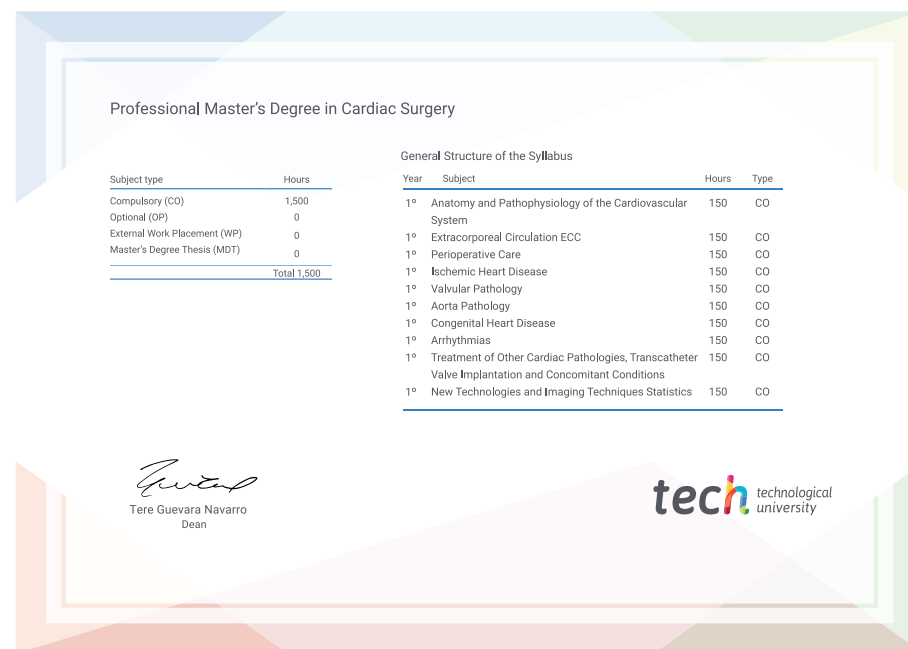
This **Professional Master's Degree in Cardiac Surgery** contains the most complete and updated scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Professional 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 Professional Master's Degree, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Professional Master's Degree in Cardiac Surgery**

Official N° of hours: **1,500 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
development language
virtual classroom



Professional Master's Degree

Cardiac Surgery

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Professional Master's Degree

Cardiac Surgery