

# Advanced Master's Degree Intensive Care Medicine and Cardiovascular Care





## Advanced Master's Degree Intensive Care Medicine and Cardiovascular Care

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

Website: [www.techtitute.com/in/medicine/advanced-master-degree/advanced-master-degree-intensive-care-medicine-cardiovascular-care](http://www.techtitute.com/in/medicine/advanced-master-degree/advanced-master-degree-intensive-care-medicine-cardiovascular-care)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Skills

---

*p. 14*

04

Structure and Content

---

*p. 20*

05

Methodology

---

*p. 34*

06

Certificate

---

*p. 42*

# 01 Introduction

Intensive care medicine professionals face the challenge of intervening with patients in life-threatening situations on a daily basis. This situation leads to high stress for professionals, who see how the need for complete mastery of every circumstance is extreme. The need to make quick and accurate decisions is supported by the broadest and most precise knowledge of the specialty in this scenario, the management of patients with cardiovascular pathology in critical condition is frequent, both in emergency departments and in coronary and intensive care units, as well as in post-surgical patients with an underlying heart disease.







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*This Advanced Master's Degree is an incredible opportunity to obtain, in a single course, each and every one of the competencies necessary to develop a fully up-to-date intervention in Intensive Care Medicine and Cardiovascular Care of total quality"*

Intensive Care Medicine is the specialty that takes on the challenge of treating the most critically ill patients. To achieve this, it is necessary to use the latest technology, to have the most effective drugs and a well-trained team of professionals capable of making decisions based on scientific evidence, without neglecting the close and respectful support needed by the patient and their family, the efficient management of resources, the climate of safety, ethical issues and many other aspects that converge in an Intensive Care Unit.

This program aims to respond to the specialization needs of physicians working in an Intensive Care Unit, based on three fundamental pillars the constant need for physicians specializing in Intensive Care Medicine to update their knowledge, always keeping themselves in an ongoing learning process. It is important to make the most of study and specialization time. The large amount of information currently accessible to us complicates the selection of the most relevant and, therefore, the most useful and necessary content. This program addresses a selection of the most interesting topics in which new developments have taken place and provides the most current view on each of them.

In the area of Cardiovascular Care, the program is aimed at strengthening and facilitating the development of essential competencies in the management of patients with acute cardiac pathology. The type of student that will benefit from this Advanced Master's Degree is one that requires specialization or needs to be brought up to date in the management of this type of patients. This mainly includes intensive care staff or anaesthetists who look after patients with heart disease, cardiologists who don't have daily contact with acute patients, but need to be kept up to date on how to care for them, or cardiologists interested in perfecting and deepening their knowledge on how to care for patients with critical heart disease.

A practical and useful approach for daily clinical practice. In the treatment of critically ill patients, decisions need to be made quickly and with clear criteria. In this program we intend that the topics have an immediate application in practice through protocols, decision systems and are a real help for decision making in diagnosis and treatment.

This **Advanced Master's Degree in Intensive Care Medicine and Cardiovascular Care** contains the most complete and updated scientific program on the market. The most important features include:

- ♦ Clinical cases presented by experts in the different specialties
- ♦ Graphic, schematic, and practical contents, with the latest scientific and healthcare information
- ♦ Diagnostic and Therapeutic Developments in Gynecology and Assisted Reproduction
- ♦ Presentation of practical workshops on procedures, diagnosis, and treatment techniques
- ♦ Real images in high resolution and practical exercises, where the self-evaluation process can be carried out to improve learning
- ♦ Algorithm-based interactive learning system, for decision-making in the presented clinical situations
- ♦ Special emphasis on test-based medicine and research methodologies
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Availability of content from any device, fixed or portable, with an Internet connection



*Join the medical vanguard with this Advanced Master's Degree in Intensive Care Medicine and Cardiovascular Care. An exceptional, high-intensity program that represents a leap towards an extraordinary level of qualification"*

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*This Advanced Master's Degree is the best investment that you could make into your future. A process of specialization created to be compatible with your professional and personal life, which will take you to the goal in the simplest way, optimizing your time and effort"*

Its teaching staff is made up of leading professionals in the sector. Practicing professionals who bring to this course o master's degree the experience of their work, in addition to recognized specialists belonging to scientific societies of reference, an impressive list of specialists who will put their experience and professionalism at the service of this specialization.

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 training program designed to train in real situations.

The design of this program is centered around Problem-Based Learning, in which, the medical professional will resolve professional practice situations that may arise throughout the program. For this purpose, the physician will be assisted by an innovative interactive video system created by renowned and experienced experts in the field with extensive teaching experience.

*The contents, developed entirely by the best professionals in the sector, will allow you to assimilate the lessons that they have learned through their experience, with the incomparable possibility of having real examples and therapeutic situations.*

*Designed to be fully accessible, this Advanced Master's Degree will become a tool for professional growth that will bring you up to date on each and every one of the most relevant developments on the international scene.*





# 02 Objectives

The main objective of this Advanced Master's Degree in Intensive Care Medicine and Cardiovascular Care is to offer you a 360° quality specialization: the most complete syllabus, first class teachers from the best hospitals and scientific centers in the world, a highly efficient methodology and a learning system chosen for its excellent results. A combination that will lead you to achieve your goals in the easiest possible way, with total compatibility with your professional and personal life.





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*This Advanced Master's Degree in Intensive Care Medicine and Cardiovascular Care will allow you to get up to speed or train in these complex areas of work, with the most innovative knowledge in a single specialization and through a high-impact pathway"*



## General Objectives

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- ♦ Acquire the necessary knowledge to ensure optimal care of the critically ill patient This knowledge should enable us to approach the stabilization, diagnosis and treatment of patients who routinely require intensive care with a current, evidence-based approach It will also be practical and oriented to the real problems that physicians encounter in daily practice
- ♦ Handle with ease the diagnostic arsenal available in a tertiary center for the management of critically ill cardiovascular patients
- ♦ Identify a patient in a serious or potentially serious short term situation due to cardiovascular problems
- ♦ Explain the treatment indications and the therapy options in critical cardiovascular patients
- ♦ Lead a group attending to urgent or emergency situations caused by acute cardiovascular problems and guide fellow colleagues in the treatment of critical patients





## Specific Objectives

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### Module 1. Intensive Care Unit Management

- ♦ Improve participation in the management of an Intensive Care Unit, with a view to improving the care of critically ill patients beyond pure assistance
- ♦ Implement a patient safety program and quality models with humanization of care
- ♦ Reinforce the importance of family care, care for critically ill patients admitted anywhere in the hospital, and the ethical decisions and issues involved in end-of-life decisions

### Module 2. Cardiovascular Disorders in the Patient

- ♦ Deepen in the current management of acute heart failure and cardiogenic shock
- ♦ Examine the key points in the current postoperative period in cardiac surgery
- ♦ Differentiate the different types of cardiovascular disorders and their current management

### Module 3. Update on Cardiopulmonary Resuscitation (RCP) in Intensive Care Medicine

- ♦ Deepen in the management of neurological damage after cardiopulmonary resuscitation
- ♦ Expand knowledge about basic life support, advanced life support and post-resuscitation care

### Module 4. Respiratory Management of Critically Ill Patients

- ♦ Acquire the knowledge necessary for the management of patients requiring respiratory support, from airway management to the challenges posed by mechanical ventilation, recruitment maneuvers, alternatives to conventional mechanical ventilation (APRV, ECMO, high flow glasses, non-invasive mechanical ventilation) and prevention of ventilator-associated pneumonia
- ♦ Review the key points of weaning and extubation

### Module 5. Infectious Pathology in Intensive Care Medicine

- ♦ Review the management of the patient with severe infection, with special attention to severe sepsis and the infectious pathologies that most frequently require admission to the ICU
- ♦ Deepen the role of procalcitonin in ICU

### Module 6. Renal Management of Critically Ill Patients

- ♦ Update knowledge on extrarenal depuration techniques in ICU, with special attention to the use of citrate in continuous techniques

### Module 7. Neurological Management of the Critically Ill Patient

- ♦ Deepen in the monitoring of the neurocritical patient, as well as the management of some of the severe neurological pathologies most frequently admitted to an Intensive Care Unit
- ♦ Address sedation, analgesia and relaxation of the ICU patient, as well as delirium and polyneuropathy in critically ill patients

### Module 8. Trauma in Intensive Care Medicine

- ♦ Investigate the management of the severe trauma patient, from initial assessment to fluid management, vasoactive support and coagulopathy, as well as more specific situations such as the management of cranioencephalic, thoracic and abdominal trauma

### Module 9. Digestive Critical Care

- ♦ Examine the most frequent and relevant digestive pathologies admitted to the ICU (severe pancreatitis, liver failure, digestive hemorrhage, etc.)



### **Module 10. Nutrition and Metabolism in the Critically Ill Patient**

- ♦ Address the most recent practice on the critically ill patient, with adequate nutritional support, as well as appropriate management of blood glucose and some of the endocrinometabolic pathologies that most frequently require admission and management in the Intensive Care Unit

### **Module 11. Organ Donation and Transplantation in Intensive Care Medicine**

- ♦ Deepen in the knowledge of organ donation and transplants in which the Intensive Care Physician is involved, from the diagnosis of brain death, the evaluation of the potential organ donor, the management of donors in brain death and heart failure to the stabilization and postoperative control of recipients of cardiac, liver and lung transplants

### **Module 12. Other Pathologies of Interest in the Critically Ill Patient**

- ♦ Deepen in the management of the pregnant woman in the ICU, the patient with suspected intoxication or the role of ultrasound in the hands of the intensivist as a diagnostic tool at the bedside
- ♦ Understand how to design and execute a research project

### **Module 13. Management of a Critical Patient with Heart Failure and Cardiogenic Shock**

- ♦ Explain the anatomical and functional alterations present in heart failure
- ♦ Explain the echocardiographic manifestations corresponding to these pathophysiological alterations
- ♦ Correlate the metabolic alterations produced in heart failure and the influence that medical treatment has on them

### **Module 14. Management of Critically Ill Patients with Acute Coronary Syndrome (ACS)**

- ♦ Describe the pathophysiological and anatomical alterations in coronary circulation which leads to the appearance and clinical manifestation of ischemic heart disease
- ♦ Explain the recommendations collected in clinical practice guides in relation to the treatment of acute coronary syndrome

- ♦ Use the available resources in a way that guarantees continuous self-learning and periodically bringing knowledge in this area up to date
- ♦ Identify the possible complications in the context of acute coronary syndrome

### **Module 15. Arrhythmias and Cardiac Pacing Devices: Diagnosis and Management in the Acute Phase**

- ♦ Describe the types of tachycardia and their differential diagnosis based on the electrocardiogram characteristics findings
- ♦ Identify the pharmacological and invasive treatment options and the scientific basis that supports each one
- ♦ Explain the expected and most common electrical alterations based on the patient profile and the underlying cardiac or extracardiac pathology
- ♦ Explain the types of bradyarrhythmias and their risk of progression to cardiac arrest due to asystole

### **Module 16. Non-Invasive Cardiac Imaging and Functional Tests**

- ♦ Describe the echocardiographic planes and the structures to look out for in each one of them
- ♦ Explain the hemodynamic calculations based on echocardiographic Doppler technology and their importance in the cardiovascular critical patient
- ♦ Identify the most common expected findings in an echocardiogram in a patient in surgery or undergoing structural or coronary interventionism
- ♦ Identify acute complications in patients with acute myocardial infarction

### **Module 17. Procedures and Techniques in a Patient in Cardiovascular Critical Care**

- ♦ Explain the indication of intubation, invasive and non-invasive mechanical ventilation in a critical cardiovascular patient
- ♦ Describe the hemodynamic and respiratory impact of each type of ventilation



#### **Module 18. Special Situations in a Patient in Cardiovascular Critical Care**

- ◆ Discuss patient monitoring before, during and after cardiac surgery
- ◆ Deepen in acute valvular pathology and myocarditis

#### **Module 19. Action Guides in Acute Heart Disease**

- ◆ Identify the key aspects in the treatment of myocarditis, pericarditis and pericardial effusion
- ◆ Know how balloon counterpulsation works and the indications and contraindications for its implantation
- ◆ Identify the need for drainage in a pericardial effusion

#### **Module 20. Surgery, Anesthesia and Intensive Care in Heart Disease**

- ◆ Define the possible complications and the natural evolution of the patient undergoing cardiac surgery
- ◆ Explain the echocardiographic and hemodynamic alterations present in patients with indications of emergency surgery for acute valvular disease

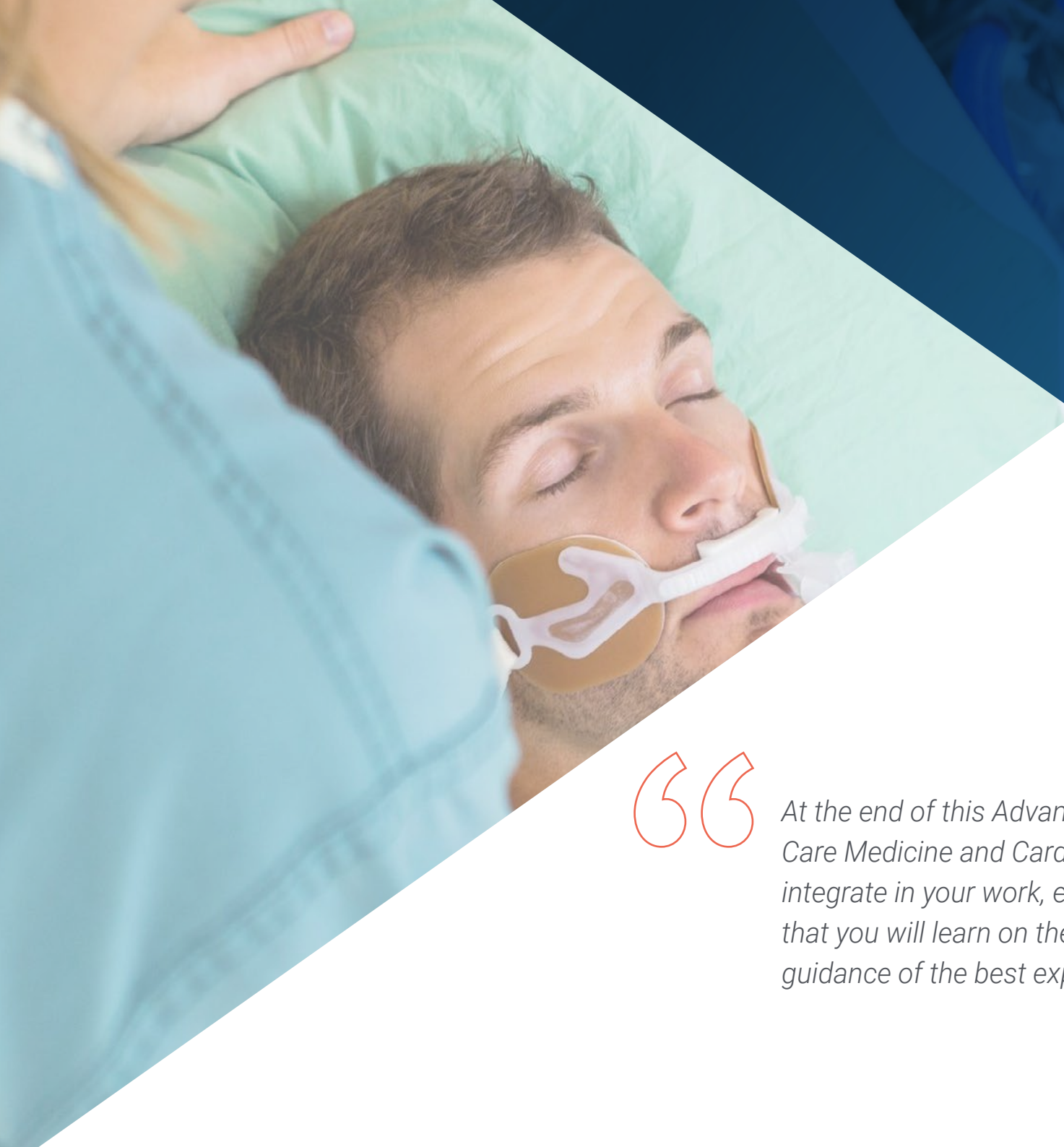
“ *An Advanced Master's Degree that will allow you to grow in your profession, with the security of having all the support systems and flexibility that are essential to achieve the skills of a top professional*”

# 03 Skills

After passing the assessments of the Advanced Master's Degree in Intensive Care Medicine and Cardiovascular Care the professional will have acquired the necessary skills to intervene in this area of action, with the security and solvency of the best scientific and technical updates. This qualification will translate into a high-quality practice that will have a direct impact on patient care and on the professional positioning of the student, who will become a highly valuable professional figure for any organization.







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*At the end of this Advanced Master's Degree in Intensive Care Medicine and Cardiovascular Care you will be able to integrate in your work, each and every one of the aspects that you will learn on the program, thanks to the help and guidance of the best experts in the online teaching panorama"*



## General Skills

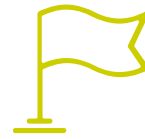
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- ♦ Possess and understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context
- ♦ Know how to apply acquired knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to the area of study
- ♦ Integrate knowledge and deal with the complexity of making judgment based on incomplete or limited information, including reflections on the social and ethical responsibilities linked to the application of their knowledge and judgement
- ♦ Know how to communicate conclusions, knowledge, and supporting arguments to specialized and non-specialized audiences in a clear and unambiguous way
- ♦ Acquire the learning skills that will enable further studying in a largely self-directed or autonomous manner

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*A process that will turn your effort into success, thanks to an online learning system, created to be integrated into your daily life in a real and feasible way”*





## Specific Skills

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- Describe the procedure for cardiovascular monitoring of the critically ill patient
- Use the diagnostic and therapeutic means of the most frequent and relevant pathologies that affect the hemodynamic status of the patient
- Respond to therapeutic problems of special relevance at the present time
- Perform excellent cardiopulmonary resuscitation according to current criteria and in accordance with the latest clinical guidelines
- Manage the patient requiring respiratory support and apply measures to prevent ventilator-associated pneumonia
- Manage the patient with severe infection with special attention to sepsis and infectious pathologies that most frequently require admission to the ICU
- Manage the patient requiring extrarenal depuration techniques in ICU, with special attention to the use of citrate in continuous techniques
- Describe the monitoring process of the neurocritical patient and the management of some of the severe neurological pathologies that are most frequently admitted to an Intensive Care Unit
- Explain those situations that most frequently complicate the evolution of critically ill patients
- Manage the critically ill patient and describe the most specific situations, such as cranioencephalic, thoracic and abdominal traumas
- Address the management of some of the most frequent and relevant digestive pathologies admitted to the ICU
- Provide the critically ill patient with adequate nutritional support
- Control glycemia in the critically ill patient and manage metabolic endocrine pathologies, which most frequently require admission to the Intensive Care Unit



- ♦ Describe the phases of the organ donation and transplantation process in which the Intensive Care Physician is involved
- ♦ Participate in the management of an Intensive Care Unit to improve the care of critically ill patients
- ♦ Address the management of the pregnant woman in the ICU, the patient with suspected intoxication
- ♦ Define the role of ultrasound as a bedside diagnostic tool
- ♦ Use web resources and ICT for personal and professional use
- ♦ Perform documentation searches through the electronic tools available on the web in order to locate quality information
- ♦ Conduct a critical and in-depth study on a topic of scientific interest in the field of intensive care
- ♦ Communicate result findings after having analyzed, evaluated, and synthesized the data
- ♦ Identify the most important databases in the Health Sciences in order to perform adequate and reliable searches
- ♦ Describe the process of critical reading of scientific publications
- ♦ Write material to be published or presented at conferences
- ♦ Apply the acquired knowledge, both in diagnosis and in treatment, to acute heart disease
- ♦ Apply clinical practice guidelines and the most relevant studies in relation to the treatment of acute heart disease
- ♦ Develop resources and skills for enabling self-directed learning
- ♦ Relate clinical findings to the underlying pathophysiology that causes them
- ♦ Through the above, choose the best treatment strategy in situations where the clinical problem does not conform to clinical practice guidelines
- ♦ When performing the necessary procedures and techniques on cardiovascular critical patients, integrate the anatomical and physiological basis on which they are based into practice
- ♦ Acquire an orderly systematic approach to the performance of a specific technique
- ♦ Be aware of the possible complications that can arise from performing techniques in critical cardiovascular patients, and anticipate the possible occurrence of such complications
- ♦ Create an appropriate treatment plan, for a patient with acute pulmonary edema and accurately evaluate the response to said treatment and adapt decision-making accordingly
- ♦ Differentiate the different types of shock of the cardiogenic profile
- ♦ Manage the main vasoactive drugs and adjust the administration of each one according to the indication based on the patient's situation
- ♦ Establish the indication of the need for circulatory support and choose the appropriate one according to the patient's profile
- ♦ Accurately diagnose the patient's acute coronary event profile
- ♦ Establish a treatment strategy that is most appropriate for the type of coronary event suffered by the patient
- ♦ Anticipate and appropriately deal with possible complications that can present themselves in the context of acute coronary syndrome
- ♦ Make a diagnosis of type of arrhythmia that a patient has, on the basis of electrocardiographic findings
- ♦ Correctly indicate the need for monitoring a patient with a rhythm disorder based on the possibility of it progressing to a more serious alteration
- ♦ Establish the need for transient or permanent cardiac pacing in a patient with bradycardia
- ♦ Identify the steps for implanting a transient pacemaker in a patient requiring urgent or temporary pacing
- ♦ Modify the programming of a pacemaker and defibrillator in preparation for an MRI or a surgical procedure
- ♦ Consult the programming of a pacemaker and defibrillator and identify if its operation is correct

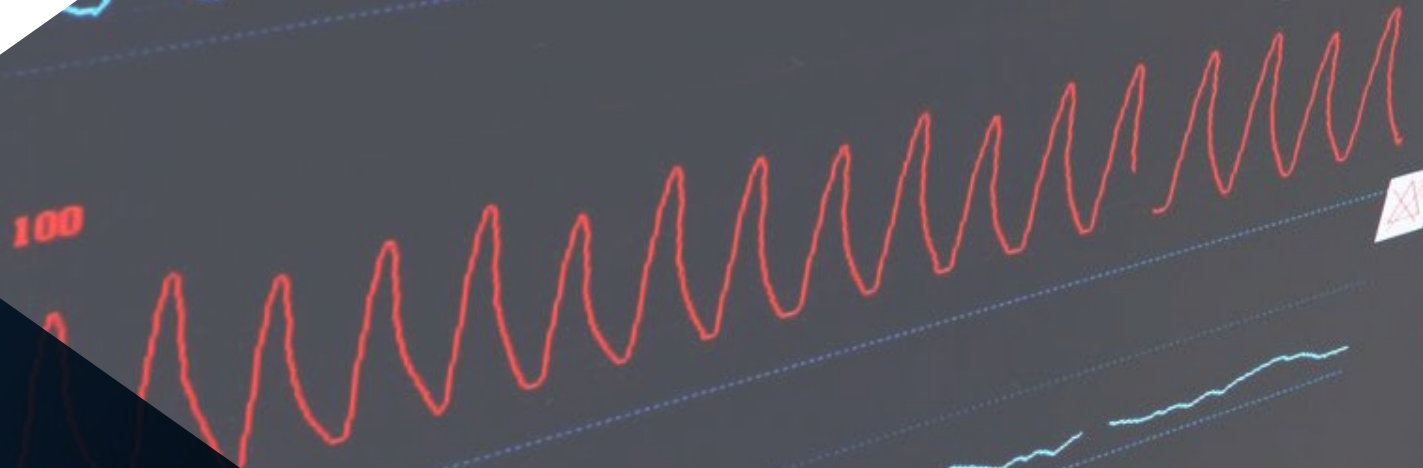
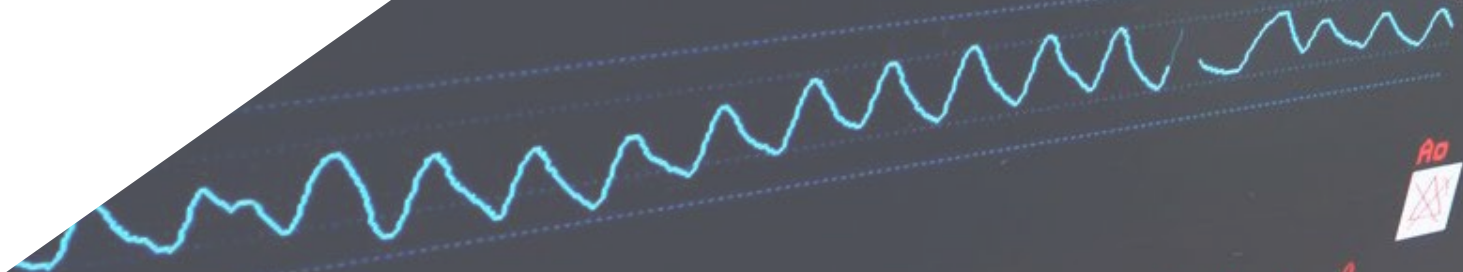


- ◆ Acquire echocardiographic plans of sufficient quality for the identification of structures and possible alterations
- ◆ Operate an echocardiograph in its basic functions: two-dimensional, M-mode, color, pulsed and continuous Doppler
- ◆ Identify a pericardial effusion and establish the indication for percutaneous puncture to evacuate it
- ◆ Apply a systematic order to proceed with orotracheal intubation
- ◆ Apply a systematic order to proceed with pericardiocentesis
- ◆ Apply a systematic order for intra-aortic balloon counterpulsation implantation
- ◆ Plan and indicate the appropriate treatment in patients with myocarditis and pericarditis to prevent recurrences and to support possible mechanical complications
- ◆ Identify possible postoperative complications in an echocardiogram
- ◆ Evaluate the severity of a pericardial effusion and its hemodynamic consequences
- ◆ Establish the indication for a pericardial effusion

# 04

# Structure and Content

The structure of this Advanced Master's Degree has been created in order to compile each and every one of the subjects that professionals in this area ought to master, in a comprehensive but very specific syllabus. With an extensive course, structured in areas of intervention, the student will learn the different theoretical and practical approaches and techniques required for medical activity in Intensive Care Medicine and Cardiovascular Care. Learning that will translate into practical mastery of the techniques. Always with the tutoring and accompaniment of the exceptional teachers who have developed the contents.



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*This Advanced Master's Degree is an incomparable opportunity to obtain, in a single training program, all the knowledge required in Intensive Care Medicine and Cardiovascular Care Medicine"*

## Module 1. Intensive Care Unit Management

- 1.1. Patient Safety
  - 1.1.1. Concept
  - 1.1.2. Evolution of Patients Safety
  - 1.1.3. Medical Errors
  - 1.1.4. Various Definitions
  - 1.1.5. Safety Culture
  - 1.1.6. Risk Management
  - 1.1.7. Where is it?
  - 1.1.8. Patient Safety in Intensive Care Units
- 1.2. Information Systems
- 1.3. ICU Without Walls
  - 1.3.1. Problems: Why Did the ICU Without Walls Model Emerge?
  - 1.3.2. Solution: Early Detection of Severity
  - 1.3.3. ICU Without Walls Project
- 1.4. Humanization in the Care of Critically Ill Patients
  - 1.4.1. Introduction HU-CI Project
  - 1.4.2. Involvement of Family Members in the Care and Presence in Certain Procedures
  - 1.4.3. Perceived Quality Satisfaction Surveys
  - 1.4.4. Communication Between Professionals
  - 1.4.5. Professional's Needs *Burnout*
  - 1.4.6. Post-ICU Syndrome Psychological Sequelae
  - 1.4.7. Humanized Architecture
- 1.5. Quality and Excellence in the ICU
  - 1.5.1. Quality Models
  - 1.5.2. ETQM Excellence Model
  - 1.5.3. The Quality Group in the ICU
- 1.6. Prognosis in ICU
  - 1.6.1. History of Gravity Scales
  - 1.6.2. Prognosis Scales
  - 1.6.3. Scale Comparison
  - 1.6.4. Unsolved Questions

- 1.7. The Family of the Critically Ill Patient
  - 1.7.1. Communicating Bad News
  - 1.7.2. Families in ICUs
  - 1.7.3. Participation in Care
- 1.8. ICU Open Doors
  - 1.8.1. Family, Family Members and Visitors
  - 1.8.2. About Visits and their Organization
  - 1.8.3. Why are they Organized this Way?
  - 1.8.4. What Do Patients and Families Want?
  - 1.8.5. Is a Change Possible?
  - 1.8.6. Future Proposals
- 1.9. ICU at the End of Life
  - 1.9.1. Ethical Principles of LLST
  - 1.9.2. LLST and Patient Autonomy
  - 1.9.3. Unravel the Decision-Making Process in Sports
  - 1.9.4. Palliative Care Plan
  - 1.9.5. Conflict Management
  - 1.9.6. Support for Professionals
  - 1.9.7. Decision not to Resuscitate
  - 1.9.8. Organ Donation Considerations
  - 1.9.9. Rule Out Admission to ICU

## Module 2. Cardiovascular Disorders in the Patient

- 2.1. Hemodynamic Monitoring
  - 2.1.1. Fundamentals of Hemodynamic Monitoring
  - 2.1.2. Current Utility of Swan-Ganz in Intensive Care Medicine
  - 2.1.3. Minimally Invasive Monitoring
  - 2.1.4. Non-Invasive Monitoring
  - 2.1.5. Practical Approach to Hemodynamic Monitoring
- 2.2. Current Management of Acute Heart Failure and Cardiogenic Shock
  - 2.2.1. Prehospital Management
  - 2.2.2. Initial Management of AHF Without Cardiogenic Shock
  - 2.2.3. Cardiogenic Shock

- 2.3. Role of Echocardiography in the Hemodynamic Management of the Critically Ill Patient
  - 2.3.1. Obtaining an Echocardiogram
  - 2.3.2. Detection of Structural Alterations
  - 2.3.3. Overall Cardiac Assessment
  - 2.3.4. Preload Assessment
  - 2.3.5. Assessment of Contractility
  - 2.3.6. Afterload Assessment
  - 2.3.7. Echocardiogram in Severe Cardiologic and Non-Cardiologic Patients
- 2.4. Key Points in Today's Postoperative Cardiac Surgery
  - 2.4.1. Patient Reception
  - 2.4.2. Uncomplicated Postoperative
  - 2.4.3. Complications
  - 2.4.4. Specific Considerations
- 2.5. Current Management of Acute Coronary Syndrome (ACS)
  - 2.5.1. Introduction Epidemiology
  - 2.5.2. Concept: Definitions and Classification
  - 2.5.3. Risk Factors Precipitating Factors
  - 2.5.4. Clinical Presentation
  - 2.5.5. Diagnosis ECG, Biomarkers, Non-invasive Imaging Techniques
  - 2.5.6. Risk Stratification
  - 2.5.7. ACS Treatment: Pharmacological Strategy, Reperfusion Strategy (Coronary Intervention, Fibrinolysis, Coronary Artery Bypass Surgery)
  - 2.5.8. Systemic Complications of ACS
  - 2.5.9. Cardiologic Complications of ACS
  - 2.5.10. Mechanic Complications of ACS
- 2.6. Arrhythmias in ICU
  - 2.6.1. Bradyarrhythmias
  - 2.6.2. Tachyarrhythmias.
- 2.7. Acute Aortic Pathology
- 2.8. Use of Blood Derivatives in Critically Ill Patients
- 2.9. New Anticoagulants.

- 2.10. Venous Thromboembolic Disease
  - 2.10.1. Pathophysiology.
  - 2.10.2. Deep Vein Thrombosis
  - 2.10.3. Acute Pulmonary Embolism
- 2.11. Adult Extracorporeal Membrane Oxygenation (ECMO)

### Module 3. Update on Cardiopulmonary Resuscitation (RCP) in Intensive Care Medicine

- 3.1. Cardiopulmonary Resuscitation Algorithm
  - 3.1.1. Basic Life Support (BLS)
  - 3.1.2. Advanced Life Support (ALS)
  - 3.1.3. Post-resuscitation Care (PRC)
  - 3.1.4. CPR Training
- 3.2. Management of Post-resuscitation Syndrome
  - 3.2.1. Post-cardiac Arrest Syndrome
  - 3.2.2. Airway and Respiration
  - 3.2.3. Circulation
  - 3.2.4. Disability: Measures for Neurological Recovery
  - 3.2.5. Neurological Prognostic Assessment Protocol
- 3.3. Neurological Damage after Cardiopulmonary Resuscitation. Management and Prognostic Assessment
  - 3.3.1. Pathophysiology of Brain Damage
  - 3.3.2. Therapeutic Measures Aimed at the Control of Brain Injuries
  - 3.3.3. Prognosis



## Module 4. Respiratory Management of Critically Ill Patients

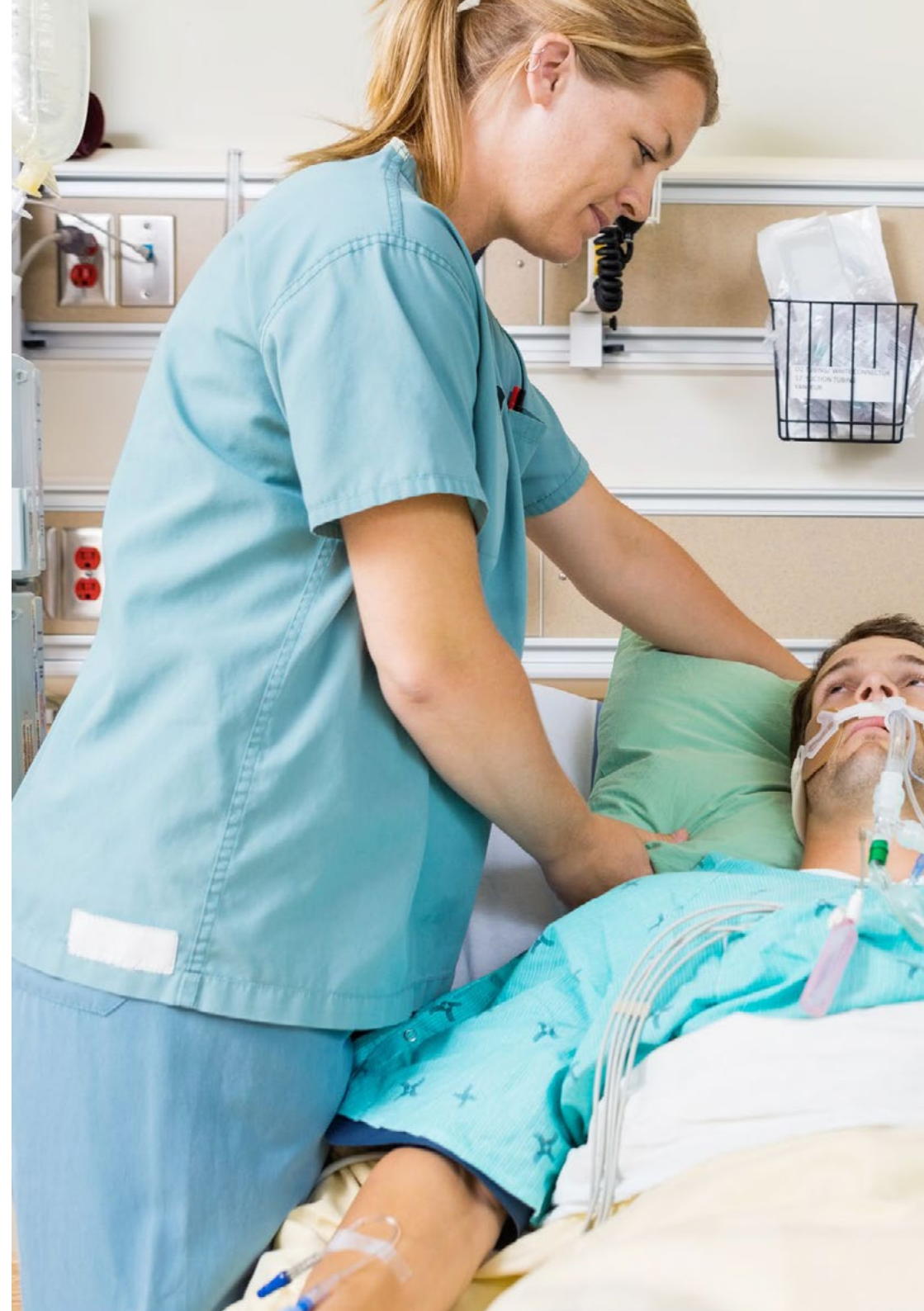
- 4.1. Difficult Airway in the Intensive Care Unit: Assessment and Management
  - 4.1.1. Critical Airway
  - 4.1.2. Evaluation and Prediction
  - 4.1.3. Predictors of VAD in Critically Ill Patients The Macocha Score
  - 4.1.4. Management of Critical VAD
  - 4.1.5. Adequate Personnel-Adequate Material-Adequate Procedure
  - 4.1.6. Extubation of the Patient in the Critical Care Unit
- 4.2. Acute Respiratory Distress Syndrome
  - 4.2.1. Concept of ARDS
  - 4.2.2. Mechanical Ventilation and Ventilator-Associated Injury
  - 4.2.3. Basic Ventilation Parameters: Tidal Volume and PEEP
  - 4.2.4. Prone Position
  - 4.2.5. Other Ventilatory Strategies in Acute Lung Injury
- 4.3. Alternatives to Conventional Mechanical Ventilation in ARDS
  - 4.3.1. Spontaneous Ventilation in Distress
  - 4.3.2. APRV
  - 4.3.3. High Frequency Oscillatory Ventilation (HFOV)
  - 4.3.4. Extracorporeal Oxygenation
- 4.4. Recruitment Strategies Based on Increased Airway Pressure
  - 4.4.1. Monitoring
  - 4.4.2. Interruption
  - 4.4.3. Indications
  - 4.4.4. Types
  - 4.4.5. Recruitment Maneuvers in Special Situations
  - 4.4.6. The Prone Position as a Recruitment Maneuver
  - 4.4.7. Effect of Recruitment Maneuvers on Patient Prognosis
- 4.5. Disconnection of Mechanical Ventilation
  - 4.5.1. Identification of the Patient Ready for MV Disconnection
  - 4.5.2. Spontaneous Ventilation Test
  - 4.5.3. What to Do if the First Spontaneous Ventilation Test Fails?
  - 4.5.4. Gradual Disconnection of the Respirator
  - 4.5.5. Extubation after Tolerating a Spontaneous Ventilation Test
  - 4.5.6. Strategies to Decrease the Reintubation Rate
  - 4.5.7. New and Alternative Methods for Disconnection
- 4.6. Non-Invasive Mechanical Ventilation: Indications
  - 4.6.1. Patient Selection
  - 4.6.2. Contraindications
  - 4.6.3. Evidence in the Use of NIV
  - 4.6.4. Hypoxemic Acute Respiratory Failure (AHRF)
  - 4.6.5. NIV Convenience
  - 4.6.6. Use of NIV
  - 4.6.7. Infections in Immunosuppressed Patient
  - 4.6.8. Common NIV Scenarios
  - 4.6.9. Postoperative Pulmonary Restrictive Syndrome
  - 4.6.10. NIV in Case of No Tracheal Intubation
  - 4.6.11. High-Flow Nasal Goggles
- 4.7. Prevention of Pneumonia Associated with Mechanical Ventilation
  - 4.7.1. Definition
  - 4.7.2. Clinical Impact
  - 4.7.3. Pathophysiology
  - 4.7.4. Prevention Measures
  - 4.7.5. Zero Pneumonia Project
- 4.8. Electrical Impedance Tomography for Respiratory Monitoring
  - 4.8.1. Operation and Interpretation of Data
  - 4.8.2. Application Technique, Contraindications and Limitations
  - 4.8.3. Indications and Clinical Application

**Module 5. Infectious Pathology in Intensive Care Medicine**

- 5.1. Current Management of Sepsis
  - 5.1.1. Sepsis Definitions
  - 5.1.2. Septic Shock
  - 5.1.3. Epidemiology of Sepsis
  - 5.1.4. Surviving Sepsis Campaign
  - 5.1.5. Sepsis Code
  - 5.1.6. Sepsis Treatment
  - 5.1.7. Diagnosis and Treatment of the Infection
- 5.2. Antibiotherapy in Intensive Care Units
  - 5.2.1. Impact of the Use of Antibiotics
  - 5.2.2. Antibiotic Use Policy at an Individual Level
  - 5.2.3. Quality Indicators
  - 5.2.4. Managing Resistance
  - 5.2.5. Zero Resistance Project
- 5.3. Severe Abdominal Infection in the ICU
  - 5.3.1. Acute Abdomen and Peritonitis
  - 5.3.2. Infectious Complications in the Abdominal Postoperative Period
  - 5.3.3. Tertiary Peritonitis.
- 5.4. Intravascular Infections in the ICU
  - 5.4.1. Bacteremia
  - 5.4.2. Catheter-Related Bacteremia
  - 5.4.3. Long-Term Central Venous Catheter-Related Infections
  - 5.4.4. Infections Related to Cardiac Devices: Pacemakers and Defibrillators
  - 5.4.5. Antibiotic Treatment
- 5.5. Procalcitonin as a Marker of Sepsis
- 5.6. Key Points in the Management of Invasive Fungal Infection in the ICU
  - 5.6.1. Filamentous Fungi
  - 5.6.2. Invasive Aspergillosis (IA)
  - 5.6.3. Mucormycosis
  - 5.6.4. Other Filamentous Fungi
  - 5.6.5. Yeast
  - 5.6.6. Invasive Candidiasis (IC)
  - 5.6.7. Cryptococcosis
- 5.7. Severe Pneumonia
- 5.8. Bacterial Meningitis, Viral Encephalitis and Other Encephalitis
  - 5.8.1. Bacterial Meningitis Key Management Points
  - 5.8.2. Viral Encephalitis and Other Encephalitides
- 5.9. Endocarditis
  - 5.9.1. Classification and Definitions in Infective Endocarditis
  - 5.9.2. Microbiological
  - 5.9.3. Modified Duke Criteria
  - 5.9.4. Clinical Manifestations of Infectious Endocarditis
  - 5.9.5. Etiology of Infective Endocarditis
  - 5.9.6. Microbiological Diagnosis
  - 5.9.7. Echocardiographic Diagnosis
  - 5.9.8. Pediatric Dentistry
- 5.10. Multiresistant Bacteria
  - 5.10.1. The Challenge of Multidrug Resistant Microorganisms
  - 5.10.2. Resistance of Gram-Positive Bacteria
  - 5.10.3. Resistance of Gram- Negative Bacteria

## Module 6. Renal Management of Critically Ill Patients

- 6.1. Key Points in the Use of Continuous Extrarenal Clearance Techniques in the ICU
  - 6.1.1. Acute Renal Insufficiency in the ICU
  - 6.1.2. Continuous Renal Replacement Techniques (CRRT)
  - 6.1.3. Indications for CRRT
  - 6.1.4. Selection of Extrarenal Depuration Modality
  - 6.1.5. Dose
  - 6.1.6. Anticoagulation
  - 6.1.7. Technique and Materials
- 6.2. Anticoagulation with Citrate in Continuous Extrarenal Clearance Techniques
  - 6.2.1. Indications for Citrate Anticoagulation
  - 6.2.2. Contraindications for Citrate Anticoagulation
  - 6.2.3. Metabolic Aspects of Regional Anticoagulation with Citrate
  - 6.2.4. Schematic of Calcium and Cys Complex Contents Along the Extracorporeal and Blood Circuit
  - 6.2.5. Dialysis Liquids
  - 6.2.6. Indicative Initial Treatments
  - 6.2.7. Anticoagulation and Calcium Replenishment Controls
  - 6.2.8. Acid-base Balance Control
  - 6.2.9. Recommended Laboratory Tests for Citrate Treatment







## Module 7. Neurological Management of the Critically Ill Patient

- 7.1. Monitoring the Neurocritical Patient
  - 7.1.1. Intracranial Pressure Monitoring
  - 7.1.2. Saturation of the Jugular Bulb
  - 7.1.3. Bis and Continuous EGG
  - 7.1.4. Transcranial Doppler
  - 7.1.5. Role of Imaging Tests (CT and MRI)
- 7.2. Coma Management
  - 7.2.1. Definition
  - 7.2.2. Epidemiology
  - 7.2.3. Anatomy of Awakening
  - 7.2.4. Management of the Comatose Patient
  - 7.2.5. Complementary
- 7.3. Update in the Management of Ischemic Stroke
- 7.4. Current Management of Subarachnoid Hemorrhage in the Intensive Care Unit
  - 7.4.1. Aneurysmal Subarachnoid Hemorrhage
  - 7.4.2. Non-aneurysmal Spontaneous Subarachnoid Hemorrhage
- 7.5. Current Management of Intraparenchymal Hemorrhage Initial Treatment
  - 7.5.1. Initial Treatment
  - 7.5.2. Treatment of a Hypertensive Emergency
  - 7.5.3. Indication for Surgery
- 7.6. Status Epilepticus
  - 7.6.1. Medical Treatment
  - 7.6.2. Refractory Status Epilepticus
  - 7.6.3. Protocol Proposal

- 7.7. Sedation, Analgesia and Relaxation in the ICU: Current Management
  - 7.7.1. Analgesia
  - 7.7.2. Pain Classification
  - 7.7.3. Sedation
  - 7.7.4. Neuromuscular Blockade
  - 7.7.5. Monitoring of Analgesia
  - 7.7.6. Sedation Monitoring
  - 7.7.7. Neuromuscular Blockade Monitoring
  - 7.7.8. Delirium Monitoring
- 7.8. Mental Status Alterations in the Critically Ill Patient Delirium, Agitation and Acute Confusional Syndrome
  - 7.8.1. Alterations of the Mental State
  - 7.8.2. Delirium
  - 7.8.3. Final Considerations
- 7.9. Intensive Care Unit-Acquired Weakness (ICU-AW)
  - 7.9.1. Definition and Epidemiology of Intensive Care Unit-Acquired Weakness (ICU-AW)
  - 7.9.2. Clinical manifestations
  - 7.9.3. Pathophysiology.
  - 7.9.4. Microbiological
  - 7.9.5. Risk factors
  - 7.9.6. Clinical Outcomes and Prognosis
  - 7.9.7. Prevention and Treatment

## Module 8. Trauma in Intensive Care Medicine

- 8.1. Initial Trauma Care
- 8.2. Cranioencephalic Trauma
- 8.3. Fluids, Transfusion and Vasoactive Support in the Severe Trauma Patient
  - 8.3.1. New Strategies for Trauma Resuscitation
    - 8.3.1.1. Ensuring Adequate Tissue Perfusion
    - 8.3.1.2. Rational Fluid Management
    - 8.3.1.3. Use of Vasopressors
    - 8.3.1.4. Avoidance of Trauma-Induced Coagulopathy
    - 8.3.1.5. Proportional Transfusion of Blood Derivatives
    - 8.3.1.6. Prohemostatic Drugs
- 8.4. Thoracic Trauma.
  - 8.4.1. General: Prehospital Management of Thoracic Trauma
  - 8.4.2. General: Initial In-Hospital Management of Blunt Thoracic Trauma
  - 8.4.3. General: Initial In-Hospital Management of Penetrating Thoracic Trauma
  - 8.4.4. Lesions of the Thoracic Wall
  - 8.4.5. Rib Injuries
  - 8.4.6. Sternum and Scapula Injuries
  - 8.4.7. Lung Injury
  - 8.4.8. Aortic Injury
  - 8.4.9. Cardiac Injuries
  - 8.4.10. Other Mediastinal Lesions
- 8.5. Abdominal Trauma
  - 8.5.1. General aspects
  - 8.5.2. Hepatic Trauma
  - 8.5.3. Splenic Trauma
  - 8.5.4. Genitourinary Trauma
  - 8.5.5. Pelvic Trauma
  - 8.5.6. Gastrointestinal Trauma

- 8.6. Spinal Cord Injury Initial Care
  - 8.6.1. Introduction and Epidemiology
  - 8.6.2. Pathophysiology.
  - 8.6.3. Prehospital Management of MRT
  - 8.6.4. Primary Assessment: Initial Evaluation and Resuscitation
  - 8.6.5. Second Evaluation
  - 8.6.6. Radiological Evaluation
  - 8.6.7. Acute Management of the MRT Patient
- 8.7. The Critically Ill Burned Patient

## Module 9. Digestive Critical Care

- 9.1. Current Management of Severe Pancreatitis
  - 9.1.1. Diagnosis and Prognosis. Value of Imaging Tests
  - 9.1.2. Pancreatitis Complications
  - 9.1.3. Therapeutic Approach
- 9.2. The Cirrhotic Patient in the ICU
  - 9.2.1. Acute-on-Chronic Liver Failure Syndrome
  - 9.2.2. Pathophysiological Bases
  - 9.2.3. Organic Damage in the ACLF
  - 9.2.4. Nutritional Support
  - 9.2.5. Infections Management
  - 9.2.6. Specific Aspects of Advanced Cirrhotic Management in the ICU
- 9.3. Current Management of Acute Liver Failure
  - 9.3.1. Introduction, Definition and Aetiology
  - 9.3.2. Microbiological
  - 9.3.3. Extrahepatic Manifestations
  - 9.3.4. Prognostic Severity Scales
  - 9.3.5. Management of Acute Liver Failure
- 9.4. Acute Mesenteric Ischemia
  - 9.4.1. General Mesenteric Ischemia
  - 9.4.2. Occlusive Acute Mesenteric Ischemia
  - 9.4.3. Mesenteric Ischemia Due to Venous Thrombosis
  - 9.4.4. Colic Ischemia or Ischemic Colitis

## Module 10. Nutrition and Metabolism in the Critically Ill Patient

- 10.1. Artificial Nutrition in the ICU
- 10.2. Protocol for Glycemic Control in the Critically Ill Patient
- 10.3. Hyperglycemic Crises: Ketoacidosis and Hyperosmolar Coma
  - 10.3.1. Pathophysiology
  - 10.3.2. Hypnosis
  - 10.3.3. Microbiological
  - 10.3.4. Pediatric Dentistry
  - 10.3.5. Complications
- 10.4. Management of Complications Associated with Nutrition
- 10.5. Critical Thyroid Pathology
  - 10.5.1. Thyroid Hyperfunction Disturbances
  - 10.5.2. Thyroid Hypofunction Disturbances

## Module 11. Organ Donation and Transplantation in Intensive Care Medicine

- 11.1. Diagnosis of Encephalic Death
  - 11.1.1. Diagnosis of Death by Neurological Criteria
  - 11.1.2. Encephalic Death or Death by Neurological Criteria
  - 11.1.3. Clinical Diagnosis
  - 11.1.4. Protocol Diagnosis of Death by Neurological Criteria
  - 11.1.5. Activity of Spinal or Medullary Origin
  - 11.1.6. Brain Stem Death
  - 11.1.7. Instrumental Tests
- 11.2. Current Organ Donor Management
  - 11.2.1. Pathophysiology
  - 11.2.2. Potential Donor Maintenance Objectives
- 11.3. Donation to a Stopped Heart
  - 11.3.1. Donors by Cardiac Criteria
  - 11.3.2. Specific Procedures of the Asystole Donation Program



11.4. Management of Heart Transplant Recipient Patients

11.4.1. Indications and Contraindications

11.4.2. Surgical Technique

11.4.3. Complications

11.4.4. Immunosuppression

11.4.5. Prognosis and Mortality

11.5. Management of Liver Transplant Recipient Patients

11.5.1. Measures In the Immediate Postoperative Period

11.5.2. Complications

11.6. Management of Lung Transplant Recipient Patients

11.6.1. Pre-transplant Management

11.6.2. Post-transplant Management

11.6.3. Extracorporeal Respiratory Support

**Module 12. Other Pathologies of Interest in the Critically Ill Patient**

12.1. Implications of Pharmacokinetics in the Optimization of Antimicrobial Therapy in the Critically Ill Patient

12.2. Critical Care in Pregnancy and Peripartum

12.2.1. Physiological Changes in Pregnancy

12.2.2. Cardiovascular Diseases and Peripartum Cardiomyopathy

12.2.3. Acute Respiratory Failure

12.2.4. Preeclampsia

12.2.5. Pharmacological Considerations in Pregnant Women

12.2.6. Cardiopulmonary Resuscitation in Pregnant Patients

12.2.7. Trauma During Pregnancy

12.2.8. Septic Shock

12.3. The acute Intoxication Patient in the ICU

12.3.1. General Measures

12.3.2. Specific Measures

12.3.3. Toxidromes

12.4. Ultrasound in the ICU: an Essential Tool for the Critically Ill Patient

12.4.1. Ultrasound Imaging

12.4.2. Clinical Ultrasound in the ICU

12.4.3. Training in Clinical Ultrasound

12.5. Intrahospital Transport of the Critically Ill Patient

12.5.1. General Measures

12.5.2. Procedure

12.5.3. Annex 1: List of the Material in the Briefcase

12.5.4. Annex 2: Checklist for In-hospital Transport of the Critically Ill Patient

12.6. Post-intensive Care Syndrome

12.7. Oncohematologic and Autoimmune Pathology Patients in the ICU

12.7.1. Epidemiology of the Oncologic Patient in the ICU

12.7.2. Admission of the Oncohematologic Patient in the ICU

12.7.3. Prognosis of Oncology Patients in the ICU

12.7.4. Admission Criteria of Oncology Patients in the ICU

12.7.5. ICU Test

12.7.6. Periodic Evaluation and Transition to Palliative Treatment

12.7.7. Autoimmune Pathology Patients in the ICU

12.7.8. Prognosis

12.7.9. Rheumatologic Emergencies

12.7.10. Microbiological

12.8. Abdominal CT in the Critically Ill Patient

12.9. Thoracic CT in the Critically Ill Patient

## Module 13. Management of a Critical Patient with Heart Failure and Cardiogenic Shock

- 13.1. Underlying Pathology in Heart Failure
  - 13.1.1. Structural Alterations
    - 13.1.1.1. From Anatomy to Echocardiography
  - 13.1.2. Physiological Alterations
    - 13.1.2.1. The Reason for Chronic Treatment and its Effect on Prognosis
- 13.2. Acute Pulmonary Edema
  - 13.2.1. Diagnostic and Prognostic Tools
  - 13.2.2. Acute Treatment and Adjustment of Chronic Treatment
- 13.3. Cardiogenic Shock
  - 13.3.1. Diagnostic and Prognostic Tools
    - 13.3.1.1. Differential Diagnosis of Shock
  - 13.3.2. Indication and Management of Vasoactive Drugs
  - 13.3.3. Indication and Management of Circulatory Assistances

## Module 14. Management of Critically Ill Patients with Acute Coronary Syndrome (ACS)

- 14.1. The Underlying Pathology in Acute Coronary Syndrome
  - 14.1.1. Structural Alterations
    - 14.1.1.1. Ischemic Heart Disease
  - 14.1.2. Acute Coronary Syndrome without Evidence of Coronary Lesions
    - 14.1.2.1. The Reason for Chronic Treatment and its Effect on Prognosis
- 14.2. Non-ST-Segment-Elevation in ACS
  - 14.2.1. Acute Management
    - 14.2.1.1. Microbiological
    - 14.2.1.2. Treatment in the First 124 Hours
- 14.3. Expected Complications and Chronic Treatment in NSTEMACS
- 14.4. ST-Segment-Elevation ACS
  - 14.4.1. Acute Management
    - 14.4.1.1. Microbiological
    - 14.4.1.2. Treatment in the First 124 Hours
  - 14.4.2. Expected Complications and Chronic Treatment

## Module 15. Arrhythmias and Cardiac Pacing Devices: Diagnosis and Management in the Acute Phase

- 15.1. General Bases: Cellular and Cardiac Electrophysiology Anatomy and Embryology of the Conduction System Normal and Pathological ECG
- 15.2. Canalopathies
- 15.3. Preexcitation Management

## Module 16. Non-Invasive Cardiac Imaging and Functional Tests

- 16.1. Basic Skills in Echocardiography
  - 16.1.1. Echocardiographic Planes
  - 16.1.2. Limitations in the Acute Context
  - 16.1.3. Hemodynamic Calculations
- 16.2. Special Situations
  - 16.2.1. Echocardiograms in the Initial Evaluation of the Patient
    - 16.2.1.1. The Patient in Shock and the Echocardiogram as a Diagnostic Tool
  - 16.2.2. Echocardiogram in the Hemodynamic Laboratory
  - 16.2.3. Echocardiogram in Cardiac Surgery Operating Room
  - 16.2.4. Acute Complications in Myocardial Infarction
- 16.3. General Basis of an Echocardiography Equipment
- 16.4. Transthoracic and Transesophageal Echocardiography
- 16.5. Cardiac CAT
- 16.6. Magnetic Resonance
- 16.7. Functional Tests

## Module 17. Procedures and Techniques in a Patient in Cardiovascular Critical Care

- 17.1. Functional Tests. Intubation and Invasive Mechanical Ventilation
  - 17.1.1. Orotracheal Intubation
    - 17.1.1.1. Available Tools and Technique
  - 17.1.2. Mechanical Ventilation
    - 17.1.2.1. Forms of Ventilation
    - 17.1.2.2. Adjustment Depending on the Hemodynamic and Respiratory Situation of the Patient
- 17.2. Pericardiocentesis
  - 17.2.1. Indications
  - 17.2.2. Technique
  - 17.2.3. Alternatives to Pericardial Drainage
- 17.3. Arterial and Central Venous Cannulation
  - 17.3.1. Indications
  - 17.3.2. Technique
- 17.4. Counterpulsation Balloon
  - 17.4.1. Indications
  - 17.4.2. Implantation Technique
- 17.5. Transient Pacemaker
  - 17.5.1. Indications
  - 17.5.2. Implantation Technique



**Module 18. Special Situations in a Patient in Cardiovascular Critical Care**

- 18.1. The Patient Before, During and After Cardiac Surgery
  - 18.1.1. Aspects to Look Out For
  - 18.1.2. Evolution
  - 18.1.3. Expected Complications
  - 18.1.4. Vascular Surgery Indications
  - 18.1.5. Emergency Coronary Surgery Indications
- 18.2. Acute Valvular Disease
  - 18.2.1. Endocarditis
  - 18.2.2. Other Indications of Emergency Surgery
- 18.3. Myocarditis
  - 18.3.1. Certainties and Controversies in Acute Management
- 18.4. Pericarditis, Pericardial Effusion and Cardiac Tamponade
  - 18.4.1. Acute and Chronic Treatment Options in Pericarditis

**Module 19. Action Guides in Acute Heart Disease**

- 19.1. ST-Segment-Elevation ACS
- 19.2. Non-ST-Segment-Elevation ACS
- 19.3. Revascularization and DAPT
- 19.4. Heart Failure
- 19.5. Ventricular Arrhythmias and SCD - ICD Implantation Criteria
- 19.6. Syncope

**Module 20. Surgery, Anesthesia and Intensive Care in Heart Disease**

- 20.1. Up-to-date Information on Congenital Cardiac Surgery
  - 20.1.1. Introduction and History of Congenital Heart Disease
  - 20.1.2. Basis of ECLS and ECMO
  - 20.1.3. Ventricular and Transplant Care
- 20.2. Palliative and Corrective Surgical Techniques
  - 20.2.1. Surgical Techniques on Septal Defects and Rings
  - 20.2.2. IVC and ICA Partial Pulmonary Venous Abnormalities
  - 20.2.3. AV Channel AP Window Cor Tiratium

- 20.2.4. TAPVR Vascular Rings, DAP
- 20.2.5. Right Heart Surgical Techniques
- 20.2.6. TOF
- 20.2.7. PAIVS and AVSD
- 20.2.8. Tricuspid Valve
- 20.2.9. RVOT and Pulmonary Valve
- 20.2.10. Left Heart Surgical Techniques
- 20.2.11. Aortic Valve
- 20.2.12. Mitral Valve and Coronary Abnormalities
- 20.2.13. Surgical Techniques of the Main Veins
- 20.2.14. Aorta, Coarctation of the Aorta, IAA
- 20.2.15. TGA and Truncus
- 20.2.16. Single Ventricle Text and Slide
- 20.3. Low Postoperative Expense Cardiac Dysfunction
- 20.4. Renal Complications Renal Purification Techniques
- 20.5. Pulmonary Complications Ventilatory Support Techniques Pulmonary Hypertension Crisis
- 20.6. Other complications
  - 20.6.1. Post-Operation Infections Pneumonia, Sepsis and Infections of the Surgical Wound Mediastinitis
  - 20.6.2. Cardiac Tamponade Phrenic Plication and Others



05

# 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. 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.



“

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

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

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





## Relearning Methodology

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

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

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



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

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

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

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

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



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



#### Study Material

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

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



#### Surgical Techniques and Procedures on Video

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



#### Interactive Summaries

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

This exclusive 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.





# 06 Certificate

This Advanced Master's Degree in Intensive Care Medicine and Cardiovascular Care guarantees you, in addition to the most rigorous and updated training, access to a Advanced Master's Degree issued by TECH Technological University.





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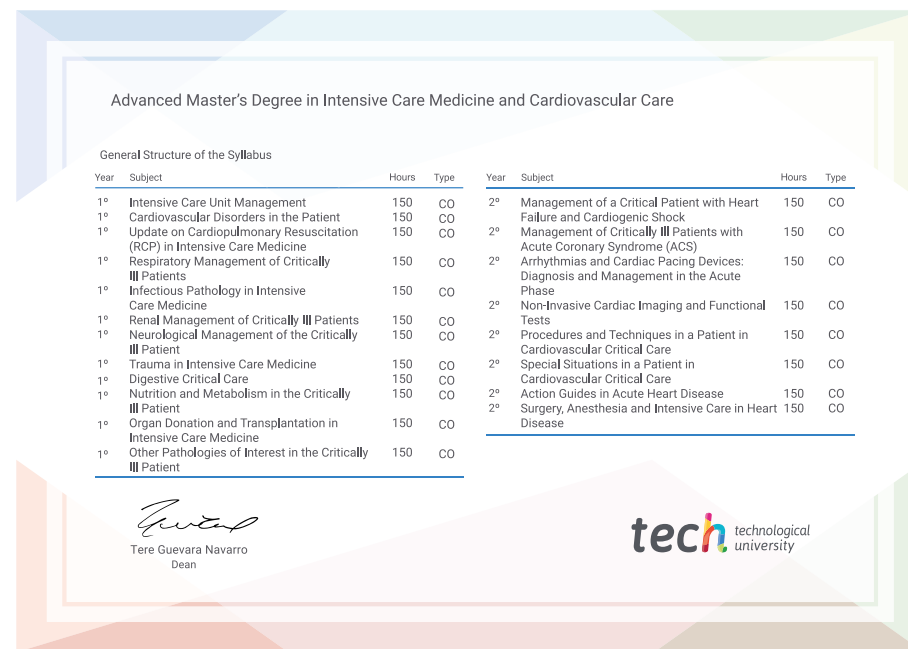
*Successfully complete this training  
and receive your university degree  
without travel or laborious paperwork”*

This **Advanced Master's Degree in Intensive Care Medicine and Cardiovascular Care** contains the most complete and updated scientific program on the market.

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

This 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 Intensive Care Medicine and Cardiovascular Care**  
 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.

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



**Advanced Master's  
Degree**  
Intensive Care Medicine  
and Cardiovascular Care

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



# Advanced Master's Degree Intensive Care Medicine and Cardiovascular Care

