

# Internship Program

## Cardiovascular Critical Care in the Emergency Department



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Internship Program  
Cardiovascular Critical Care  
in the Emergency Department

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# 01 Introduction

Today, cardiovascular diseases continue to dominate hospital Emergency departments. However, the continuous technological development in terms of diagnostic and therapeutic methods has made it possible for these pathologies to be treated in an agile way, so that their proper application is essential to ensure the patient's well-being. Because of this, TECH has created this program, through which the cardiologist will incorporate all the advances in cardiovascular critical care in his work routine in a 100% practical way. During 120 hours, they will have access to a highly prestigious hospital and will acquire a series of cutting-edge skills that will enrich their medical practice.



*Throughout this academic experience, you will master innovative protocols to ensure the safety of the patient suffering from heart failure"*







Cardiovascular pathologies are very common in today's society, and it is very common to receive patients in hospitals with various diseases that must be diagnosed and treated quickly to ensure their short, medium and long-term recovery. In this regard, adequate monitoring, echocardiographic management and prevention of possible complications that may arise are of particular importance to promote the well-being of the patient. Therefore, cardiologists have the obligation to constantly enrich their knowledge in this field in order to provide rigorous care to each patient, adapted to the particularities of their disease.

In view of this circumstance, TECH has decided to design this innovative program, with which students will have the opportunity to spend 3 weeks in a first class hospital center to increase their skills in cardiovascular critical care in a practical way. During this period of time, the student will be part of an exquisite multidisciplinary team and, in first person, will apply new health techniques with the patient with pericardiocentesis or will manage the protocols for action against heart failure. Additionally, they will master the administration of the most cutting-edge pharmacological treatments to combat pulmonary Hypertension.

During these 120 hours of professional development, the student will be guided by a tutor selected specifically for them, who will be in charge of giving them the best advice applicable in their daily medical practice, as well as solving all their concerns. This experience, therefore, will allow the Cardiology specialist to increase his health skills in a short period of time, completely compatible with other obligations.

# 02

## Why Study an Internship Program?

In the world of medicine, applying the most up-to-date procedures in the detection and treatment of cardiovascular diseases that require urgent attention is an essential aspect in order to guarantee the patient's recovery. For this reason, TECH has designed an exclusively practical program, which will enable the doctor to broaden their skills in these areas through professional experience in a prestigious hospital. Thanks to this, they will be able to enrich their medical activity in just 3 weeks to position themselves at the forefront of the Cardiology sector.



*TECH offers you a unique opportunity to broaden your skills in the field of cardiovascular critical care by practicing your profession from the very first moment with real patients in a highly prestigious hospital"*

### 1. Updating from the latest technology available

The area of cardiovascular critical care is constantly evolving thanks to the emergence of new drugs, diagnostic procedures and treatments that allow rapid intervention to save patients' lives. For this reason, TECH has created this program, which will allow the physician to assimilate all the advances in their field in a practical way.

### 2. Gaining In-Depth Knowledge from the Experience of Top Specialists

Throughout their hospital experience, students will be integrated into a top-quality multidisciplinary team. Guided at all times by their tutor, they will deal with patients in a real environment in order to adopt the latest procedures in cardiovascular critical care to their daily activity.

### 3. Entering First-Class Clinical Environments

TECH carefully selects all available centers for Internship Programs. Thanks to this, the specialist will have guaranteed access to a prestigious clinical environment in the areas of cardiovascular critical care. In this way, you will be able to see the day-to-day work of a demanding, rigorous and exhaustive sector, always applying the latest theses and scientific postulates in its work methodology.





#### 4. Putting the acquired knowledge into daily practice from the very first moment

In the current academic market, there is a high number of programs that forget the practical applicability of the contents offered. Because of this, TECH has designed a pioneering teaching model, which will allow the physician to learn by working with real patients in order to preserve the acquired knowledge useful in their profession.

#### 5. Expanding the Boundaries of Knowledge

TECH offers the possibility of carrying out this Internship Program in centers of international importance. In this way, the specialist will be able to increase their skills together with the best professionals, who practice in first class hospitals. A unique opportunity that only TECH could offer.



*You will have full practical immersion  
at the center of your choice"*

# 03 Objectives

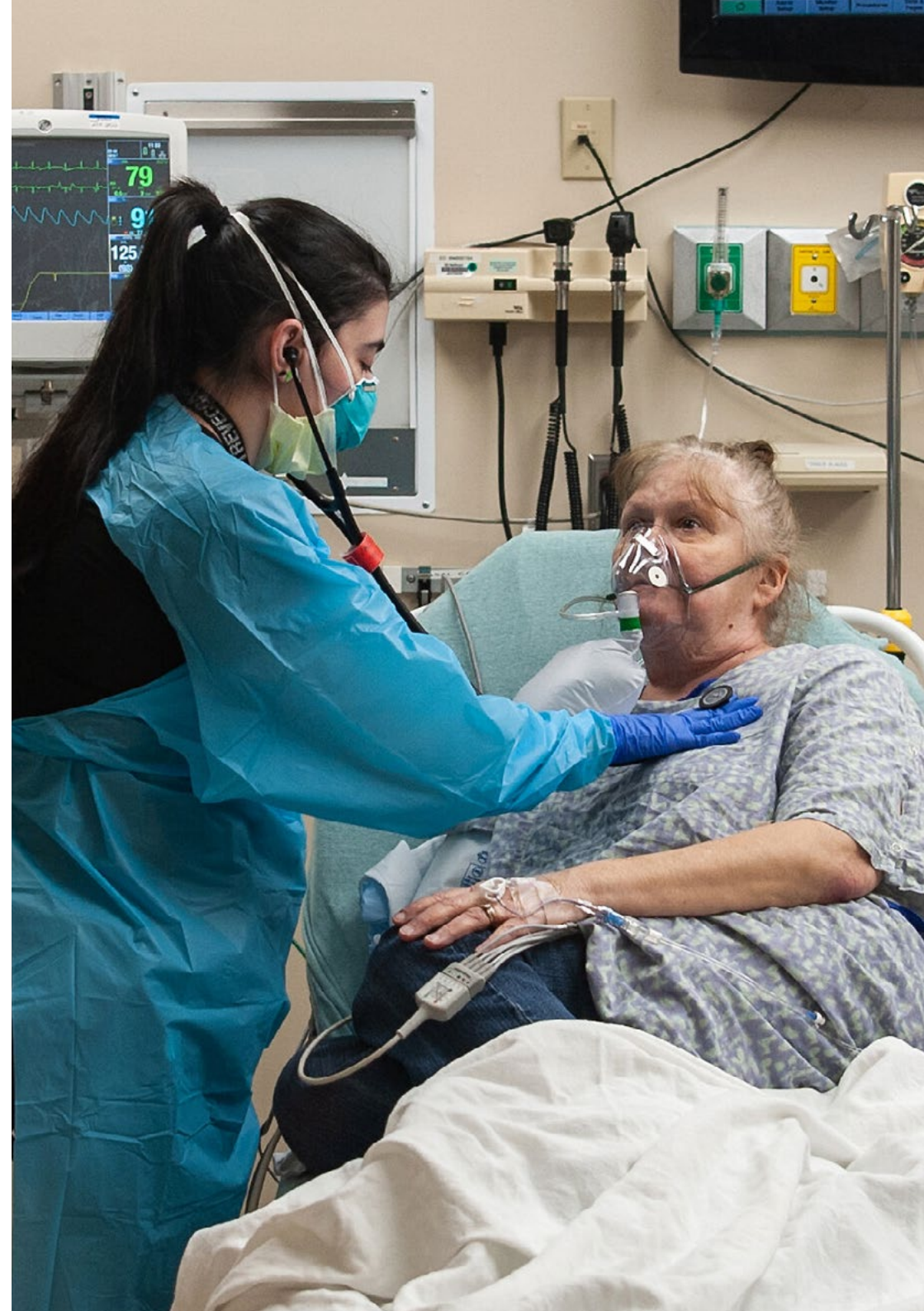
The objective of this Internship Program is to enable physicians to broaden and update their skills in dealing with patients requiring cardiovascular critical care through a real work experience in a first level hospital.



## General Objectives

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- Handle with ease the diagnostic arsenal available in a medical center for the management of critically ill cardiovascular patients
- Identify patients 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 situation caused by acute cardiovascular problems and guide fellow colleagues in the treatment of critical patients







## Specific Objectives

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- ♦ Explain the anatomical and functional alterations present in heart failure, as well as the echocardiographic manifestations corresponding to these pathophysiological alterations
- ♦ Correlate the metabolic alterations that occur in heart failure and the influence of medical treatment on them
- ♦ Analyze the pathophysiological and anatomical alterations in coronary circulation which leads to the appearance and clinical manifestation of ischemic heart disease
- ♦ Master the recommendations contained in clinical practice guidelines regarding the treatment of acute coronary syndrome
- ♦ Identify the possible complications existing in the context of acute coronary syndrome
- ♦ Describe the types of tachycardia and their differential diagnosis based on the electrocardiogram characteristics findings
- ♦ Specify the pharmacological and invasive treatment options and the scientific basis that supports each one
- ♦ Manage echocardiographic images and the structures to be visualized in each one of them
- ♦ Detect 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
- ♦ Know acute complications in patients with acute myocardial infarction
- ♦ Master the indication of intubation, invasive and non-invasive mechanical ventilation in a critical cardiovascular patient
- ♦ Observe the hemodynamic and respiratory impact of each type of ventilation
- ♦ 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
- ♦ Address the key aspects in the treatment of myocarditis, pericarditis and pericardial effusion
- ♦ Diagnose non-invasive cardiac problems from imaging
- ♦ Detect non-invasive cardiac disorders and manage their functional tests
- ♦ Assimilate the main reasons for pulmonary hypertension and its treatment process
- ♦ Analyze the main causes of arrhythmias in fetal age
- ♦ Manage treatments that improve neonatal arrhythmia problems
- ♦ Evaluate young patients and perform a cardiac analysis



*Through this program, you will increase your ability to attend to urgent cardiac situations and guide your colleagues in these tasks"*

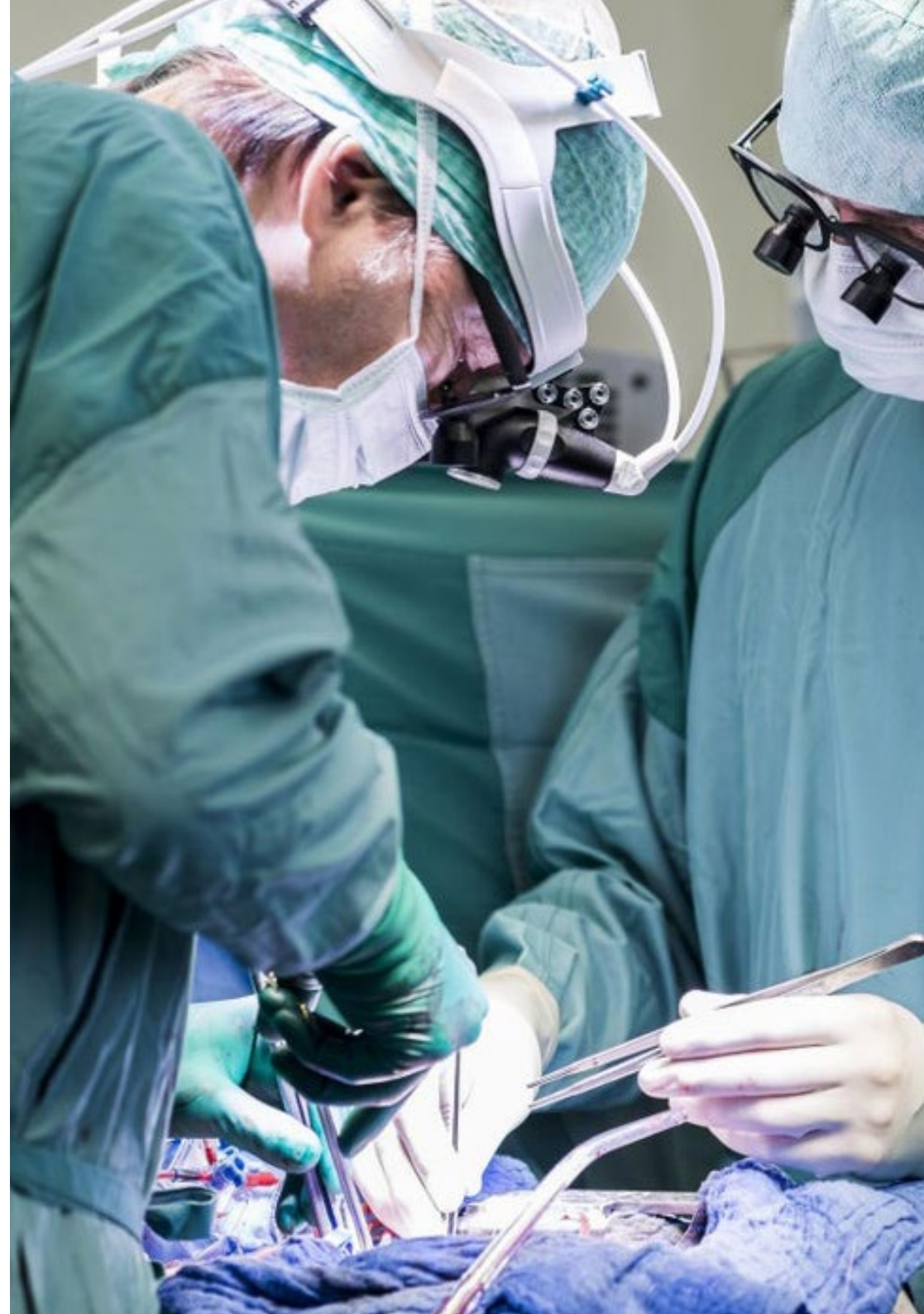
# 04 Educational Plan

The Internship Program in Cardiovascular Critical Care in the Emergency Department consists of a 3-week stay in a referral hospital center, from Monday to Friday, with 8-hour working days under the guidance of a specialist. Integrated in a multidisciplinary medical team, the student will deal with patients in need of cardiovascular critical care and will apply the most innovative therapy to ensure their well-being and preserve their life.

In this completely practical Internship Program, the activities are aimed at developing and perfecting the skills necessary to provide health care care in areas and conditions that require highly qualified professionals, and are oriented towards specific expertise for practicing the activity, in a safe environment for the patient and with highly professional performance.

It is, therefore, an excellent opportunity to develop high medical skills by working in a hospital, where the use of advanced diagnostic and therapeutic methods are essential to ensure the health of patients. Through this experience, the physician will enhance their health care skills to become a cutting-edge professional.

The practical teaching will be carried out with the active participation of the student performing the activities and procedures of each area of skill (learning to learn and learning to do), with the accompaniment and guidance of the professors and other fellow trainees that facilitate teamwork and multidisciplinary integration as transversal skills for medical practice (learning to be and learning to relate).





The procedures described below will be the basis of the practical part of the training, and their implementation is subject to both the suitability of the patients and the availability of the center and its volume of work, the proposed activities being the following:

Module	Practical Activity
<b>Heart Failure, Cardiogenic Shock and Acute Coronary Syndrome</b>	Prescribe a treatment for the patient presenting with acute pulmonary edema and evaluate their response to it in order to tailor decision making accordingly
	Administer vasoactive substances for the critical care patient who requires them
	Carry out the treatment strategy adapted to each type of coronary syndrome the patient experiences
<b>Arrhythmias in adulthood, fetal and pediatric age</b>	Diagnose, based on electrocardiographic findings, the type of arrhythmia in an adult patient
	Monitor a patient with arrhythmia that presents a possibility of progression to a more severe alteration
	Perform an evaluation of the youngest patient to detect a possible arrhythmia and establish the appropriate treatment for it
<b>Procedures and techniques in a Patient in cardiovascular critical care</b>	Consult the programming of a pacemaker and defibrillator to detect if its operation is appropriate
	Modify the programming of a pacemaker and defibrillator in preparation of an MRI or a surgical procedure
	Undertake mechanical ventilation of the patient to ensure adequate oxygen delivery
<b>Pulmonary Hypertension</b>	Diagnose possible pulmonary Hypertension in pediatric patients
	Pharmacological treatment of pulmonary Hypertension in the adult patient
	Carry out the health care and care for the patient who has undergone pulmonary transplantation



# 05 Where Can I Do the Internship Program?

TECH offers its students a wide range of hospitals for the completion of this Internship Program, with the fundamental objective of making it possible for them to choose a center that completely adapts to their professional and personal requirements. All of them have first class technological resources that will help the physician to perform with ease in the cardiovascular care of critical patients.




*Do your Internship Program in a first class hospital, equipped with the best conditions and great technological resources”*





The student will be able to do this program at the following centers:



**Medicine**

### Hospital HM Modelo

Country	City
Spain	La Coruña


Address: Rúa Virrey Osorio, 30, 15011,  
A Coruña

Network of private clinics, hospitals and private specialized centers distributed throughout Spain

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**Related internship programs:**

- Anaesthesiology and Resuscitation
- Palliative Care



**Medicine**

### Hospital HM San Francisco

Country	City
Spain	León


Address: C. Marqueses de San Isidro, 11,  
24004, León

Network of private clinics, hospitals and private specialized centers distributed throughout Spain

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**Related internship programs:**

- Update in Anesthesiology and Resuscitation
- Trauma Nursing



**Medicine**

### Hospital HM Regla

Country	City
Spain	León


Address: Calle Cardenal Landázuri, 2,  
24003, León

Network of private clinics, hospitals and private specialized centers distributed throughout Spain

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**Related internship programs:**

- Update on Psychiatric Treatment in Minor Patients



**Medicine**

### Hospital HM Nou Delfos

Country	City
Spain	Barcelona


Address: Avinguda de Vallcarca, 151,  
08023 Barcelona

Network of private clinics, hospitals and private specialized centers distributed throughout Spain

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**Related internship programs:**

- Aesthetic Medicine
- Clinical Nutrition in Medicine



**Medicine**

### Hospital HM Madrid

Country	City
Spain	Madrid


Address: Pl. del Conde del Valle de Súchil, 16,  
28015, Madrid

Network of private clinics, hospitals and private specialized centers distributed throughout Spain

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**Related internship programs:**

- Palliative Care
- Anaesthesiology and Resuscitation



**Medicine**

### Hospital HM Montepíncipe

Country	City
Spain	Madrid

Address: Av. de Montepíncipe, 25, 28660,  
Boadilla del Monte, Madrid

Network of private clinics, hospitals and private specialized centers distributed throughout Spain

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**Related internship programs:**

- Palliative Care
- Aesthetic Medicine





Medicine

### Hospital HM Torrelodones

Country City  
Spain Madrid

Address: Av. Castillo Olivares, s/n, 28250,  
Torrelodones, Madrid

Network of private clinics, hospitals and private specialized  
centers distributed throughout Spain

**Related internship programs:**

- Anaesthesiology and Resuscitation
- Palliative Care



Medicine

### Hospital HM Sanchinarro

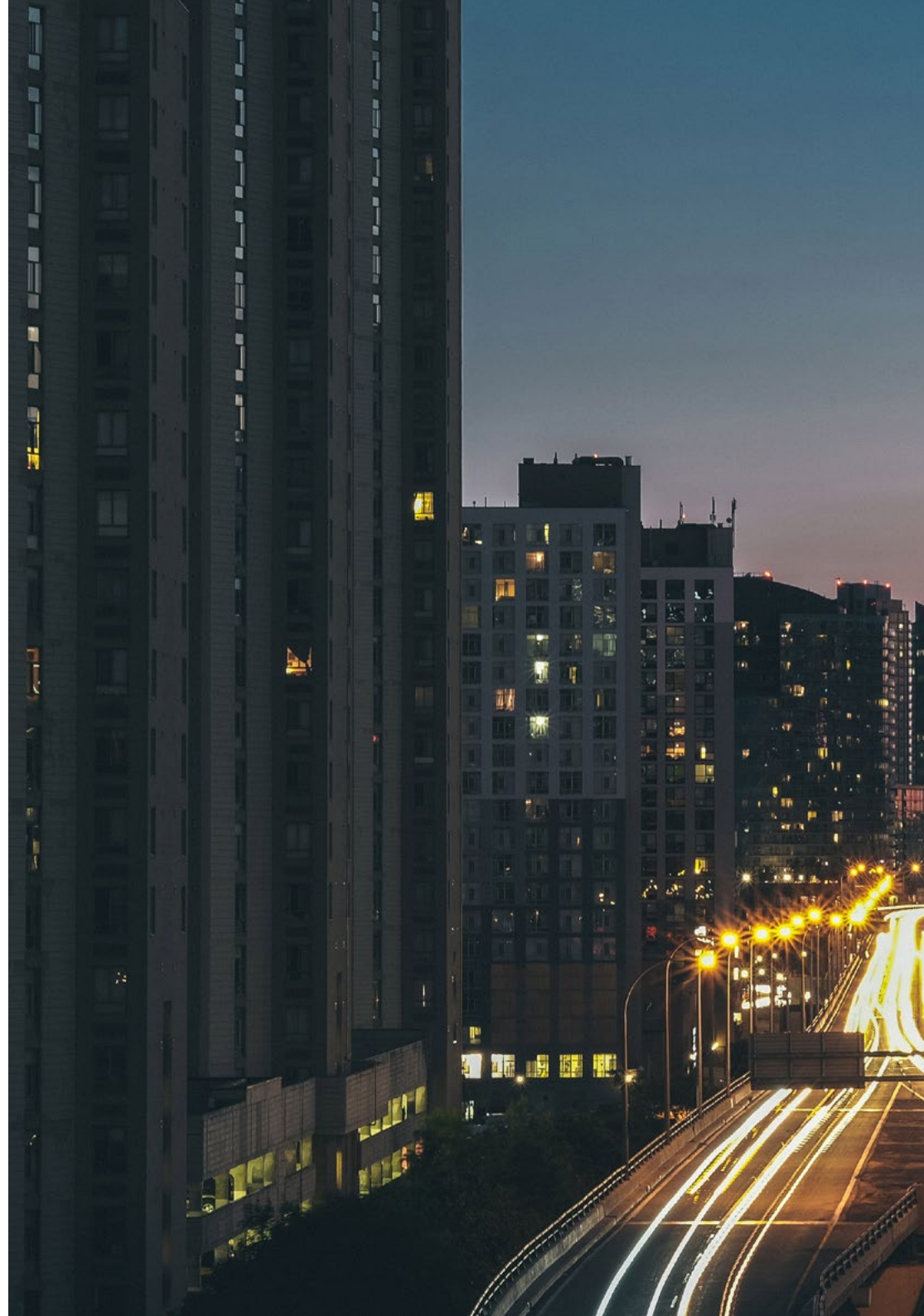
Country City  
Spain Madrid

Address: Calle de Oña, 10, 28050, Madrid

Network of private clinics, hospitals and private specialized  
centers distributed throughout Spain

**Related internship programs:**

- Anaesthesiology and Resuscitation
- Palliative Care







Medicine

### Hospital HM Puerta del Sur

Country City  
Spain Madrid

Address: Av. Carlos V, 70, 28938,  
Móstoles, Madrid

Network of private clinics, hospitals and private specialized centers distributed throughout Spain

**Related internship programs:**

- Palliative Care
- Clinical Ophthalmology



Medicine

### Hospital HM Vallés

Country City  
Spain Madrid

Address: Calle Santiago, 14, 28801, Alcalá  
de Henares, Madrid

Network of private clinics, hospitals and private specialized centers distributed throughout Spain

**Related internship programs:**

- Gynecologic Oncology
- Clinical Ophthalmology

# 06

## General Conditions

### Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this entity commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the Internship Program period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship program at the center.





## General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

**1. TUTOR:** During the Internship Program, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor, whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

**2. DURATION:** The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

**3. ABSENCE:** If the students does not show up on the start date of the Internship Program, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

**4. CERTIFICATION:** Professionals who pass the Internship Program will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** The Internship Program shall not constitute an employment relationship of any kind.

**6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Internship Program. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

**7. DOES NOT INCLUDE:** The Internship Program will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.



# 07 Certificate

This **Internship Program in Cardiovascular Critical Care in the Emergency Department** contains the most complete and up-to-date program in the professional and academic landscape.

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

The diploma issued by TECH will reflect the grade obtained in the test.

Title: **Internship Program in Cardiovascular Critical Care in the Emergency Department**

Duration: **3 weeks**

Attendance: **Monday to Friday, 8 consecutive hour shifts**

Total Hours: **120 h. of professional practice**





Internship Program  
Cardiovascular Critical Care  
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