

# Hybrid Professional Master's Degree

Advances in Hematology  
and Hemotherapy





## Hybrid Professional Master's Degree Advances in Hematology and Hemotherapy

Course Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.

Website: [www.techtitute.com/us/medicine/hybrid-professional-master-degree/hybrid-professional-master-degree-advances-hematology-hemotherapy](http://www.techtitute.com/us/medicine/hybrid-professional-master-degree/hybrid-professional-master-degree-advances-hematology-hemotherapy)



# Index

01

Introduction

02

[Why Study this Hybrid Professional Master's Degree?](#)

03

Objectives

04

Skills

p. 4

p. 8

p. 12

p. 18

05

Course Management

06

Planning of teaching

07

Clinical Internship

p. 22

p. 28

p. 40

08

[Where Can I Do the Clinical Internship?](#)

09

Methodology

10

Certificate

p. 48

p. 54

p. 62

01

# Introduction

Malignant tumors in lymphatic tissue and hematopoietic organs are one of the diseases with the highest incidence worldwide. In countries such as Colombia, leukemia is the main death cause in children aged 5 to 14 years. Faced with this reality, the relation between hematology specialists and the pharmaceutical industry must be strengthened. Therefore, research has been accelerated by obtaining, for example, bone marrow sample digitization programs to develop a network of connected hematology laboratories. The need for doctors updated in digital tools such as this, has prompted TECH to offer a theoretical and practical degree. In the first instance, the student will deepen their medical knowledge through 100% online teaching and then put it into practice in a clinical stay with experts dedicated to this area.



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*The updating of knowledge is more efficient if it is based on practice. This program not only offers you the best theoretical contents, but also the possibility of putting them into practice in a prestigious hospital center"*

The multiple cases of hematological cancers have forced scientists to focus on this area in order to address their afflictions. The study of hematology and hemacytometry techniques are evolving rapidly thanks to tools such as immunotherapy treatments, in which many new monoclonal antibodies inhibiting lymphocyte cellular immunotolerance to the tumor are being found.

The clinical labor market demands specialists who can apply the latest scientific developments in this field. These experts must not only deal with hematological malignancies, but must also be familiar with all the techniques for the diagnosis of iron deficiency and anemias, the administration of direct-acting oral anticoagulants of iron deficiency and anemias, administration of Direct Acting Oral Anticoagulants-ACOD, bone marrow transplantation and research focused on obtaining artificial blood as a long-term solution. All this with the aim of that hematologists include these methods in the health care of international health systems.

TECH has developed this qualification in detail, thanks to the contribution of experts in the field, who have been qualified in the field of hemostasis, coagulation laboratories, the area of hospitalization and hematopoietic transplantation, clinical trials in hematology, regenerative medicine and stem cells. The teaching team will transmit the theoretical knowledge in the first instance to the specialists so that, in the second period of the program, they can put it into practice in a hospital center.

Thanks to the practical stay in a recognized clinic, hematologists will develop in depth their practical skills when confronted with real cases. TECH proposes this teaching model, given the need for specialists to be taught rigorously and directly in the space in which they carry out their professional careers.

In addition, TECH offers a simple study based on 100% online and downloadable content that specialists can rely on at any time and place, even after completing the qualification. It is an effective methodology that will allow for an adequate and flexible academic provision, so that it can be adapted to the personal and professional needs of hematology experts.

This **Hybrid Professional Master's Degree in Advances in Hematology and Hemotherapy** contains the most complete and up-to-date educational program on the market. The most important features include:

- Development of more than 100 clinical cases developed by experts in hematology and hemotherapy who will transmit their experience to the specialists taking this program
- 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
- Assessment tests for primary and secondary hemostasis, interpretation of prothrombin, thrombin and activated thromboplastin times; use of thromboelastography; mastering and interpretation of fibrinolysis tests: mediators of tissue reperfusion; diagnosis of hemophilia and monitoring monitoring of coagulation in patients with critical bleeding disorders
- Mastery and knowledge of platelet bleeding disorders
- Diagnosis and new treatments for Waldenström macroglobulinemia
- New Developments in the General Treatment of Hematologic Diseases
- Diagnosis and Treatment of Hemolytic Disease in Fetuses and Newborns
- All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection
- In addition, you will be able to carry out a clinical internship in one of the best hospitals in the world

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*Broaden your professional experience with the collaboration of teachers and experts in the lymphatic area who will guide you in the study with the guarantee of their rigorousness”*

In this proposed Professional Master's Degree, of a professionalizing nature and blended learning modality, the program is aimed at the updating of hematologists who perform their functions in hemotherapy units and require a high level of qualification. The contents are based on the latest scientific evidence, and oriented in a didactic way to integrate theoretical knowledge into clinical practice, and the theoretical-practical elements will facilitate the updating of knowledge and facilitate decision making in the face of patients' pathologies.

Thanks to their multimedia content developed with the latest educational technology, they will allow the medical professional to learn in a contextual and situated learning environment, that is, a simulated environment that will provide immersive learning programmed to train in real situations. The design of this program is centered on Problem Based Learning, by means of which the student must try to solve the different situations of professional practice that arise throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.

*This Professional Master's Degree will allow you to practice hematology in real environments, which will provide an immersive learning experience designed to face daily clinical situations.*

*Update your knowledge through the Hybrid Professional Master's Degree in Advances in Hematology and Hemotherapy, in a practical and flexible way that adapts to your needs.*



02

## Why Study this Hybrid Professional Master's Degree?

The health professional must have an updated clinical praxis focused on providing the most effective service to their patients. Thanks to the qualification you will be able to have a superior competence and performance, supporting your daily medical practice in the most important scientific progresses of today. TECH at the forefront of education has developed this highly specific approach program, where Advances in Hematology and Hemotherapy are shown and the specialist will be updated on the most advanced and effective therapeutic and diagnostic methods for hematological diseases.



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TECH appreciates the professional's need for qualification and has created this program that facilitates learning by combining two direct, convenient and on-site methods. Expand your frontiers and advance to success”

### **1. Updating from the latest technology available**

TECH has designed this unique teaching model that combines two advanced, convenient, direct and on-site methods. You will learn the most specific Advances in Hematology and Hemotherapy, such as the incorporation of new areas such as cytometry, cytogenetics and molecular biology, their diagnostic and therapeutic methods with the latest technology and cutting-edge resources. In addition, you will enjoy hands-on training in a prestigious clinical center for 3 weeks with the most appropriate technical equipment.

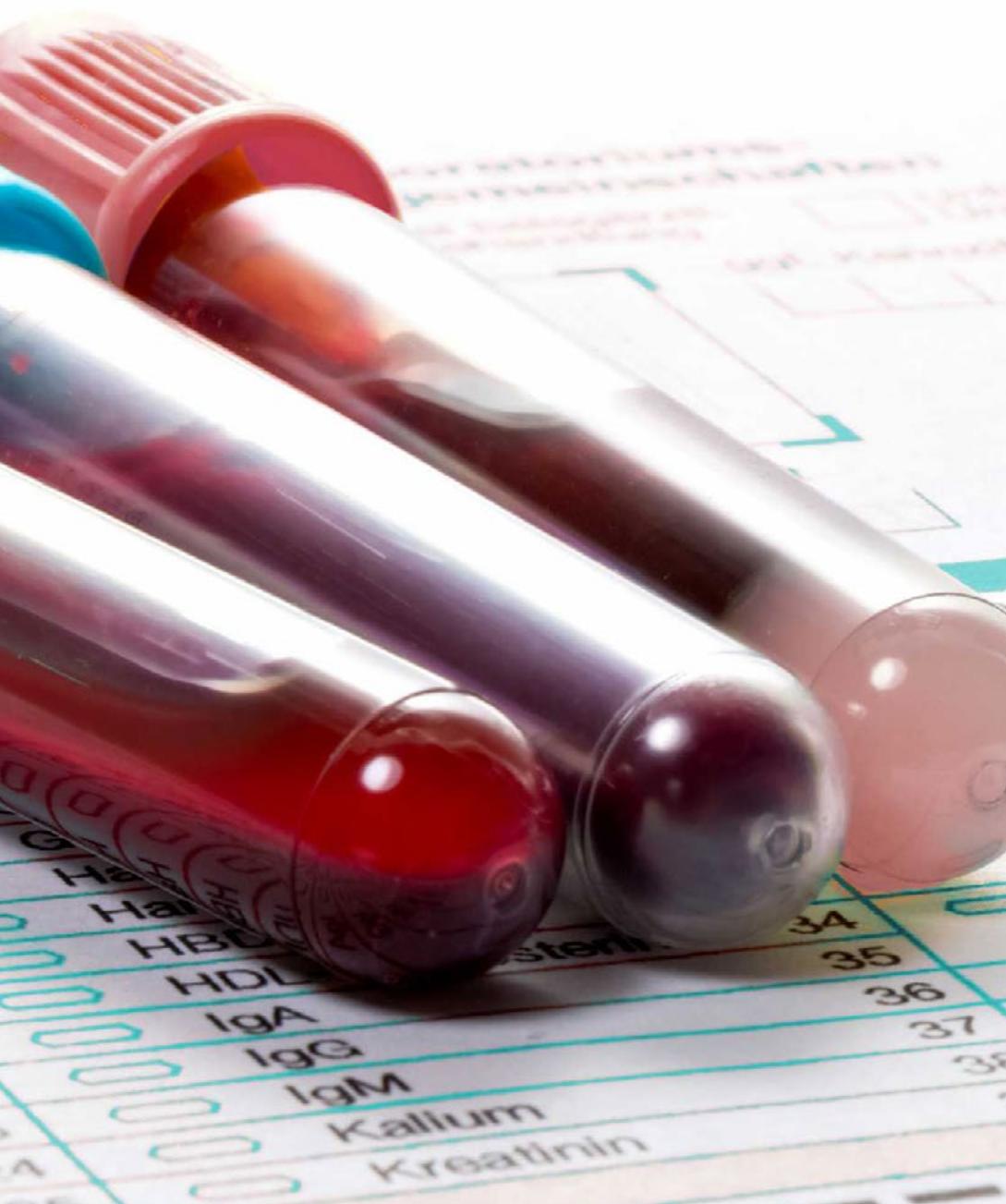
### **2. Gaining In-Depth Knowledge from the Experience of Top Specialists**

A team of specialized teachers has been directly involved in the configuration of this syllabus, who, with their decades of experience in medicine, provide great contributions to this program and to the student who completes it. In addition, you will be accompanied during the internship process by a tutor who will show you through his approach all the knowledge in the clinical center chosen for this 3-week period.

### **3. Entering First-Class Clinical Environments**

The student will have guaranteed access to a prestigious clinical environment in the area of medicine to learn about all the advances in hematology and hemotherapy. 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. Combining the Best Theory with State-of-the-Art Practice

This program emphasizes the need for medical professionals to update their knowledge. For this reason, it has developed an academic space that contains the most complete study material, with a new model of 100% practical teaching. 3 weeks in a prestigious clinical center. This will facilitate the learning and implementation of new competencies in terms of the service offered.

#### 5. Expanding the Boundaries of Knowledge

TECH offers a catalog of options for those who wish to continue their professional improvement process. Thanks to its 100% practical method, you will approach real cases from the hands of specialists in the medical area of study and you will improve your performance, broadening your job prospects and improvements.

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

03

# Objectives

The design of this qualification has been based on the experience of professionals working in the area, in order to offer a superior instruction to hematologists interested in expanding their knowledge and updating their performance techniques.

A practical teaching that will allow you to explore aspects such as updates in transfusion medicine and hematopoietic cell transplantation, innovative treatments with CAR-T cells for hematological malignancies, the latest in plasma cell dyscrasias and advances in leukemias, lymphomas and other oncohematological diseases. TECH establishes a series of general and specific objectives and specific objectives for the greater satisfaction of the future expert, being the following:



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*This program will allow you to update your knowledge from a real scenario, with the maximum scientific rigor of an institution that applies medical technology in hemotherapy"*



### General Objective

- The Hybrid Professional Master's Degree in Advances in Hematology and Hemotherapy aims at that the medical professional updates the diagnostic and therapeutic procedures of the specialty in a theoretical-practical way. TECH achieves this through practical experience in a rigorous hospital clinic that applies technological innovation to its diagnostics. Experts will be able to develop comprehensive prevention, diagnosis, treatment and rehabilitation actions, with a multidisciplinary and integrative approach that facilitates medical care with the highest quality standards for the control and follow-up of hematological patients

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*This refresher program will bring professional benefits to the physician also in praxis, such as the development of new drugs for the future and other therapeutic modalities”*





## Specific Objectives

### Module 1. Recent Discoveries in Hematopoiesis, Cytogenetics and Immunophenotyping in Hematology

- To examine the current events surrounding the immune system and the main advances in recent years
- To discriminate cell culture types based on the latest available scientific evidence
- To learn about Advances in Structure and Function of Lymphoid Tissue

### Module 2. Update on the Importance of Laboratories in Hematology and Hemotherapy

- To provide training and theoretical-practical improvement that will allow to execute a clinical diagnosis of certainty supported by the efficient use of diagnostic methods
- To provide training and theoretical-practical improvement that will allow to execute a clinical diagnosis of certainty supported by the efficient use of diagnostic methods

### Module 3. Update on Anemia

- To provide the participants with advanced, in-depth, updated and multidisciplinary information that allows a comprehensive approach to the hematological health-disease process, facilitating its correct treatment and the use of all therapeutic modalities
- To address in detail and depth the most updated scientific evidence on the mechanisms of action, adverse effects, dosage and use of drugs for these diseases

### Module 4. Scientific Developments in Spinal Cord Disorders

- To explain the complex pathophysiologic and etiopathogenic interrelationships in the mechanisms of production of hematologic diseases
- To emphasize the role of the rational use of diagnostic technologies in the study of these patients

### Module 5. Current Events in Hemostasis Physiology

- To get updated in areas of molecular and cellular biology, providing general concepts of a new molecular language, indispensable for their future medical practice, both at clinical and diagnostic laboratory levels
- To deepen in epidemiological studies on morbimortality due to hematological disorders
- Explain the pathophysiological and pathogenic interrelationships between each of these diseases in morbidity and mortality

### Module 6. Update on Coagulation, Thrombosis, and Fibrinolysis Tests

- To identify the main tools that allow to perform a correct blood analysis procedure
- To analyze in depth the samples obtained after the test has been carried out
- To develop medical protocols to treat coagulation, thrombosis and fibrosis in an appropriate way, aiming at the patient's improvement

### **Module 7. New Developments in Major Bleeding Disorders**

- To know the main bleeding disorders that most frequently occur in patients
- To identify the most common symptoms such as urine in the blood, nosebleeds, or internal bleeding
- To prevent future clotting in major intravenous inflows

### **Module 8. Update on Antihemorrhagics**

- To identify the main techniques of hemorrhagic prevention
- To analyze the main and newest techniques for blood flow improvement

### **Module 9. Advances in Leukemia, Lymphomas and other Oncohematologic Diseases**

- To analyze the patient's progress and severity to predict the use of dialysis treatment
- To identify the main lymphatic complications that may occur in patients and their severity and complications with respect to their future life
- To prevent oncohematological diseases with appropriate medical treatment

### **Module 10. Plasma Cell Dyscrasias Update**

- To rule out hematologic cancer from plasma cell study and analysis in patients with symptoms
- To identify the main symptoms that may occur in patients and to perform a correct bone marrow study





**Module 11. New developments in general therapeutics of hematological diseases**

- To discuss the importance of a comprehensive and integrated care approach across all disciplines involved in caring for these patients
- To emphasize the development of new drugs for the future and other treatment approaches for controlling these diseases

**Module 12. Update on Transfusion Medicine and Hematopoietic Cell Transplantation**

- To explain the latest advances introduced in clinical practice on hematopoietic progenitor cell transplantation
- To get up to date on the latest concepts of hemotherapy in the use of blood and blood products

# 04 Skills



After completing the Hybrid Professional Master's Degree in Advances in Hematology and Hemotherapy, the specialist will have acquired the professional competencies necessary to apply the epidemiological and clinical method in collective and individual care. In addition, it will reinforce your critical reading of the scientific literature on these diseases. And, in turn, you will get the tools to communicate your research results. The specialist will also develop their learning in a wide range of clinical and epidemiological contexts.

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*Thanks to this program you will be able to update your knowledge in basic and automated hemacytometry and automated hematological cytomorphology and cytochemistry"*



## General Skills

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- To increase their competence and performance in comprehensive medical care actions for hematologic diseases and the overall health care of their patients in general, through the in-depth study of the epidemiological, preventive, clinical, pathophysiological, diagnostic, therapeutic and rehabilitative elements of these diseases
- To perfect skills to manage, advise or lead multidisciplinary teams for the study of blood cell and hematopoietic organ disorders and drugs for their treatment in communities or individual patients, as well as scientific research teams
- Develop skills for self-improvement, in addition to being able to provide training and professional improvement activities due to the high level of scientific and professional preparation acquired with this program
- To educate the population in the field of prevention in order to acquire and develop a culture of and develop a culture of prevention in the population, based on healthy lifestyles and lifestyles





## Specific Skills

- ◆ To master health determinants and their impact on morbidity and mortality rates in hematological diseases
- ◆ To identify and analyze the latest scientific information on hematology and chemotherapy, as well as associated diseases, in order to design plans and programs that allow the control of these diseases
- ◆ To master different techniques of basic and automated hemacytometry, as well as cytomorphology and hematological cytochemistry
- ◆ To master the special techniques of flow cytometry, and basic techniques of molecular biology and cytogenetics applied to hematopoietic processes
- ◆ To diagnose these diseases in a timely manner, based on the clinical manifestations of these early stages of these diseases for their correct treatment, rehabilitation and control
- ◆ To substantiate the importance of integrated clinical-diagnostic-therapeutic discussion with the participation of all the specialists associated with the care of these patients as an important institutional medical care measure for the best integral care of these patients
- ◆ To master the clinical, epidemiological, diagnostic and therapeutic elements supported by the best scientific evidence available for these patients
- ◆ To identify the fundamental aspects of pharmacokinetics and pharmacodynamics for the use of drugs for these pathologies
- ◆ To halt the progression of drug misuse, based on reasoned treatment and supported by the best scientific evidence
- ◆ To correctly use and interpret all diagnostic and other resource studies in the care of your patients

- ◆ To master the indications, management, and complications of patients undergoing allogeneic transplantation of hematopoietic progenitors from an unrelated donor
- ◆ To advise working teams of the pharmaceutical and biotechnology industry in the process of research and production of new drugs and alternatives for the treatment of hematological diseases and chemotherapy
- ◆ To lead work teams in health institutions, such as death committee, quality of care, drug utilization, etc
- ◆ To develop normative or referential documents such as clinical practice guidelines or policies for the care of these patients

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*The team of professionals involved in the configuration of this program have decades of experience and have poured it into all the study material, which translates into quality guarantee”*

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# Course Management

TECH has drawn on a team of faculty members who are at the forefront of hematology, translational research, hematology diagnostics and hemotherapy. Thanks to their experience, specialists in this program will receive complementary instruction that will deepen their knowledge of hematological studies. In addition, this professional team will provide students with personalized tutoring to resolve all study questions.



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*Leading professionals in the field of hemotological medicine will provide you with the most relevant technological and scientific advances in this field"*

## International Guest Director

Dr. Joseph Hai Oved is a pediatric hemato-oncology specialist at Memorial Sloane Kettering Cancer Center, considered one of the best cancer centers in the world. His work focuses on **stem cell and bone marrow transplantation**, as well as cell therapies, to treat non-cancerous diseases. His work in the field of transplantation to patients with difficult-to-treat immune dysfunctions or inherited immune deficiencies, as well as those with bone marrow failure syndromes, is particularly noteworthy.

His research is prolific in the hemato-oncology area, seeking new ways to personalize transplantation to achieve a precise cure with minimal side effects. He has studied in depth the effects of the different techniques used to manipulate donated stem cells, extracting or adding specific cells of interest. He has also analyzed how exposure to different conditioning agents (chemotherapies or other drugs used to prepare the body for transplantation) affect outcomes. His work has advanced the identification of biomarkers to more accurately predict transplant outcomes.

Joseph is a member of several **national and international groups in bone marrow transplantation, hematology and immunology**. He serves on committees of many of these organizations, where they discuss potential future therapies, clinical trials and efforts to further advance the field of pediatric transplantation and cellular therapies worldwide.

All his scientific contribution places him as a reference in his field, receiving several awards. These include two fellowships awarded by the Howard Hughes Medical Institute, one of the largest privately funded organizations for biological and medical research in the United States. He also received a fellowship in immunology from the Weizmann Institute of Science, considered one of the most advanced multidisciplinary research institutions in the world.



## Dr. Hai Oved, Joseph

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- Member of the Scientific Advisory Board of Emendo Biotherapeutics.
- Managing Partner of New World Health, LLC
- Observer on the board of BioTrace Medical Inc.
- Pediatrician specializing in hemato-oncology at Children's Hospital of Philadelphia
- M.D. from NYU School of Medicine
- Fellowship in pediatric hemato-oncology at Children's Hospital of Philadelphia
- Residency in Pediatrics at New York Presbyterian Weill Cornell Medical College

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*Thanks to TECH you will be  
able to learn with the best  
professionals in the world"*

## Guest Director



### Dr. Martínez López, Joaquín

- Head of the Hematology Department at the 12 Octubre Hospital
- President of Altum Sequencing
- Director of the translational research group and the early clinical trials unit in hematology at 12 de Octubre Hospital
- Director of the CRIS Cancer Foundation
- PhD in Medicine from the Complutense University of Madrid.
- Degree in Medicine from the University of Granada
- Internship in Cellular Therapy at the University of Toronto

## Professors

- Specialty in Hematology and Hemotherapy at La Fe University Hospital.

### Dr. Sánchez Pina, José María

- Specialist in Hospitalization and Hematopoietic Transplantation at 12 de Octubre University Hospital.
- Member of the Cell Therapy group at 12 de Octubre Hospital.
- Degree in Medicine from the University of Alcalá
- Specialty in Hematology and Hemotherapy at 12 de Octubre University Hospital.
- Professional Master's Degree in Hematopoietic Transplantation 4th Edition by the University of Valencia



**Dr. Carreño Gómez-Tarragona, Gonzalo**

- Hematology and Hemotherapy Service of the 12 de Octubre University Hospital.
- Researcher Specializing in Molecular Etiopathogenesis of Hematological Neoplasms
- Degree in Medicine from the Autonomous University Madrid.
- Professional Master's Degree in Hematopoietic Transplantation by the University of Valencia
- Member of the Clinical Research Ethics Committee of the 12 de Octubre University Hospital.

**Dr. Rodríguez Rodríguez, Mario**

- Specialist in Thrombophilia and Hemostasis at the 12 de Octubre University Hospital.
- Specialist in thrombophilia and hemostasis consultation and in the basic and special coagulation laboratory at the 12 de Octubre University Hospital.
- Participation in quality work for ENAC accreditation of the coagulation laboratory of the 12 de Octubre University Hospital.
- Graduate in Medicine and Surgery from the Complutense University of Madrid
- Specialty in Hematology and Hemotherapy at the 12 de Octubre University Hospital.

**Dr. Paciello Coronel, María Liz**

- Specialist in Hematology and Hemotherapy at the 12 de Octubre University Hospital.
- Hematology resident tutor at 12 de Octubre Hospital.
- Collaborator in clinical trials as principal investigator and sub-investigator
- Graduate in Medicine and Surgery from the National University of Asuncion.

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## Educational Plan

The contents of this program have been carefully designed by highly experienced specialists in the sector, who endorse its syllabus. Thanks to the distribution of knowledge, the specialist will learn about the role of hematopoietic cells, biopathology, the development of laboratory techniques in cytogenetics and molecular biology, advances in anemias, as well as spinal cord disorders and the physiology of hemostasis, among other aspects. From the first module, the expert will expand his knowledge of the innate and adaptive immune system, in addition to exploring new developments in megakaryopoiesis and thrombopoiesis and cell cultures and cytokines. All this, supported by a team that guarantees its study.



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*It explores specialized laboratory techniques such as the use of autoanalyzers, cytochemical techniques and bone marrow aspirate”*



**Module 1.** Recent Discoveries in Hematopoiesis, Cytogenetics and Immunophenotyping in Hematology

- 1.1. Current role of the multipotent hematopoietic cell, progenitor cells, growth factors and cytokines
  - 1.1.1. Hematopoietic Stem Cells: Characteristics and Functions
  - 1.1.2. Progenitor Cells
  - 1.1.3. Hematopoietic Growth Factors
  - 1.1.4. Cytokines
- 1.2. Biopathology of Granulopoiesis and Monocytopoiesis
  - 1.2.1. Biopathology of Granulopoiesis
  - 1.2.2. Biopathology of Monocytopoiesis
- 1.3. Advances in the Structure and Function of Lymphoid Tissue
  - 1.3.1. Structure of the Lymphoid Tissue
  - 1.3.2. Types of Lymphoid Tissue
  - 1.3.3. Function of Lymphoid Tissue
- 1.4. Immune System Current Events. Development, Regulation, and Activation of B and T Cells
  - 1.4.1. Development and Regulation of the Innate Immune System
  - 1.4.2. Development and Regulation of the Adaptive Immune System
  - 1.4.3. Immune System Functions
  - 1.4.4. Immunosuppression
- 1.5. Differentiation Antigens: Latest Findings
  - 1.5.1. Types of Differentiation Antigens
  - 1.5.2. Physiology
  - 1.5.3. Diagnostic Utilities
- 1.6. New Developments in Megakaryopoiesis and Thrombopoiesis
  - 1.6.1. Biology of Megakaryopoiesis
  - 1.6.2. Biology of Thrombopoiesis
- 1.7. Cell culture and cytokines update
  - 1.7.1. Types of Cell Cultures
  - 1.7.2. Cell Culture Biology
  - 1.7.3. Cell Culture Uses
  - 1.7.4. Cytokines and their Role in Cell Differentiation

**Module 2.** Update on the Importance of Laboratories in Hematology and Hemotherapy

- 2.1. Development of Specialized Laboratory Techniques in Recent Years
  - 2.1.1. Handling of Autoanalyzers
  - 2.1.2. Cytomorphology of Peripheral Blood
  - 2.1.3. Bone Marrow Cytomorphology. Cytochemical Techniques. Bone Marrow Aspiration, Medulogram
- 2.2. Diagnostic Techniques of Anemic Syndrome: Recent Advances
  - 2.2.1. Hemoglobin and hematocrit
  - 2.2.2. Peripheral Lamina
  - 2.2.3. Reticulocyte Count
  - 2.2.4. Hemolysis Tests
  - 2.2.5. Other Tests for Studying Anemias
- 2.3. Flow Cytometry in the Diagnosis of Hematologic Diseases
  - 2.3.1. Fundamentals and Methodology of the Cytometry Technique
  - 2.3.2. Usefulness in the Diagnosis of Hematologic Diseases
- 2.4. Basic Cytogenetic and Molecular Biology Techniques
  - 2.4.1. Principles of Cytogenetics
  - 2.4.2. Cytogenetics and Genetic Rearrangements in Hematologic Diseases
  - 2.4.3. Cytogenetic Techniques
  - 2.4.4. Principles and Techniques of Molecular Biology in Hematology
- 2.5. New Techniques of Hemostasis and Thrombosis
  - 2.5.1. Tests that Measure the Functioning of Primary Hemostasis
  - 2.5.2. Tests that Measure the Functioning of Secondary Hemostasis
  - 2.5.3. Evidence of Physiological Inhibitors of Coagulation
- 2.6. Immunohematology Techniques: Present and Future
  - 2.6.1. Basis and Methodology of Immunohematology Techniques
  - 2.6.2. Usefulness for Diagnosing Hematologic Diseases

- 2.7. Therapeutic Apheresis Techniques: Current Developments
  - 2.7.1. Plasmapheresis
  - 2.7.2. Leukoapheresis
  - 2.7.3. Erythroapheresis
  - 2.7.4. Thrombocytapheresis
- 2.8. Current techniques for the collection, manipulation and preservation of hematopoietic progenitors of hematopoietic progenitors
  - 2.8.1. Progenitor Cell Donor Selection
  - 2.8.2. Progenitor Mobilization in Autologous and Healthy Donor
  - 2.8.3. Apheresis of Hemopoietic Progenitors in Autologous and Allogeneic Transplantation
  - 2.8.4. Bone Marrow Extraction by Surgical Procedure
  - 2.8.5. Lymphocyte Collection: Procedure, Indications, Complications
  - 2.8.6. Product Suitability Tests: Minimum Cellularity, Viability, Microbiological Studies
  - 2.8.7. Progenitor Infusion: Procedure and Complications
- 3.4. Congenital Dyserythropoietic Anemias
  - 3.4.1. Concept
  - 3.4.2. Etiology
  - 3.4.3. Clinical Manifestations
  - 3.4.4. Diagnosis
  - 3.4.5. Current Treatments.
- 3.5. Iron deficiency anemia and disturbances in iron metabolism and iron overload: current management
  - 3.5.1. Concept
  - 3.5.2. Classification and Etiology
  - 3.5.3. Clinical Picture
  - 3.5.4. Staged Diagnosis of Iron Disorders
  - 3.5.5. Treatment Variants of Iron Disorders
- 3.6. Megaloblastic Anemias: Recent Advances
  - 3.6.1. Concept
  - 3.6.2. Classification and Etiology
  - 3.6.3. Clinical Picture
  - 3.6.4. Diagnostic Approach.
  - 3.6.5. Current Treatment Schemes and Recommendations
- 3.7. Hemolytic Anemias: From Laboratory to Clinic
  - 3.7.1. Concept
  - 3.7.2. Classification and Etiology
  - 3.7.3. Clinical Picture
  - 3.7.4. Diagnostic Challenges
  - 3.7.5. Alternative Treatments
- 3.8. Hemoglobin Disorder Anemias
  - 3.8.1. Concept
  - 3.8.2. Classification and Etiology
  - 3.8.3. Clinical Picture
  - 3.8.4. Analytical Diagnostic Challenges
  - 3.8.5. Treatment Variants

### **Module 3. Anemia Update**

- 3.1. Mechanism of Erythropoiesis, Erythroid Differentiation and Maturation.
  - 3.1.1. Biopathology and Physiopathology of Erythrocytes
  - 3.1.2. Structure and Types of Hemoglobin
  - 3.1.3. Functions of Hemoglobin
- 3.2. Classification of Erythrocyte Disorders and Clinical Manifestations
  - 3.2.1. Classification of Erythrocyte Disorders
  - 3.2.2. Symptoms and Signs of Anemia by Organ Systems
- 3.3. Pure Red Cell Aplasia
  - 3.3.1. Concept
  - 3.3.2. Etiology
  - 3.3.3. Clinical Manifestations
  - 3.3.4. Diagnosis
  - 3.3.5. Current Treatment Alternatives
- 3.4. Congenital Dyserythropoietic Anemias
  - 3.4.1. Concept
  - 3.4.2. Etiology
  - 3.4.3. Clinical Manifestations
  - 3.4.4. Diagnosis
  - 3.4.5. Current Treatments.
- 3.5. Iron deficiency anemia and disturbances in iron metabolism and iron overload: current management
  - 3.5.1. Concept
  - 3.5.2. Classification and Etiology
  - 3.5.3. Clinical Picture
  - 3.5.4. Staged Diagnosis of Iron Disorders
  - 3.5.5. Treatment Variants of Iron Disorders
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  - 3.6.1. Concept
  - 3.6.2. Classification and Etiology
  - 3.6.3. Clinical Picture
  - 3.6.4. Diagnostic Approach.
  - 3.6.5. Current Treatment Schemes and Recommendations
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  - 3.7.1. Concept
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  - 3.7.3. Clinical Picture
  - 3.7.4. Diagnostic Challenges
  - 3.7.5. Alternative Treatments
- 3.8. Hemoglobin Disorder Anemias
  - 3.8.1. Concept
  - 3.8.2. Classification and Etiology
  - 3.8.3. Clinical Picture
  - 3.8.4. Analytical Diagnostic Challenges
  - 3.8.5. Treatment Variants

**Module 4. Scientific Developments in Spinal Cord Disorders**

- 4.1. Medullary Aplasia
  - 4.1.1. Definition
  - 4.1.2. Epidemiology and Etiology
  - 4.1.3. Clinical Manifestations
  - 4.1.4. Clinical and Staged Diagnosis according to Diagnostic Tests
  - 4.1.5. Latest Treatment Recommendations
- 4.2. Myelodysplastic Syndromes: Latest Classifications
  - 4.2.1. Definition
  - 4.2.2. Epidemiology
  - 4.2.3. Clinical Manifestations
  - 4.2.4. Diagnosis and Current Classifications
  - 4.2.5. Current Review of the Treatment and Use of Hypomethylating Therapy
- 4.3. Updated Approach to Agranulocytosis
  - 4.3.1. Definition
  - 4.3.2. Epidemiology and Etiology
  - 4.3.3. Clinical Manifestations
  - 4.3.4. Diagnostic Complexities
  - 4.3.5. New Developments in Treatment
- 4.4. Polycythemia Vera
  - 4.4.1. Definition
  - 4.4.2. Epidemiology
  - 4.4.3. Clinical Manifestations
  - 4.4.4. Diagnosis
  - 4.4.5. Current Treatment Alternatives
- 4.5. Essential Thrombocythemia
  - 4.5.1. Definition
  - 4.5.2. Epidemiology
  - 4.5.3. Clinical Manifestations
  - 4.5.4. Diagnosis
  - 4.5.5. Treatment Review

## 4.6. Chronic Idiopathic Myelofibrosis

- 4.6.1. Definition
- 4.6.2. Epidemiology
- 4.6.3. Clinical Manifestations
- 4.6.4. Diagnosis
- 4.6.5. Therapeutic Approaches

## 4.7. Hypereosinophilic Syndrome

- 4.7.1. Definition
- 4.7.2. Epidemiology
- 4.7.3. Clinical Manifestations
- 4.7.4. Diagnostic Complexities
- 4.7.5. Treatment: Literature Review

## 4.8. Mastocytosis

- 4.8.1. Definition
- 4.8.2. Epidemiology
- 4.8.3. Clinical Manifestations
- 4.8.4. Use of Diagnostic Tests
- 4.8.5. Alternative Treatments.

**Module 5. Current Events in Hemostasis Physiology**

## 5.1. Update on the Biopathology of Hemostasis Types

- 5.1.1. Primary Hemostasis
- 5.1.2. Secondary Hemostasis

## 5.2. Advances in Vascular Endothelium Biology and Functions

- 5.2.1. Vascular Endothelium Biology
- 5.2.2. Vascular Endothelium Functions
- 5.2.3. Main Vascular Endothelial Mediators
- 5.2.4. Endothelial Dysfunction

## 5.3. Platelets and their Role in Coagulation: Recent Discoveries

- 5.3.1. Platelet Formation
- 5.3.2. Platelet Functions and Mediators
- 5.3.3. Platelets in Hemostasis

- 5.4. Plasma Factors and the Coagulation Cascade: From Research to the Clinic
  - 5.4.1. Synthesis and Structure of Coagulation Factors
  - 5.4.2. Functions of Plasma Coagulation Factors in the Coagulation Cascade
  - 5.4.3. Coagulation Factor Deficiency
- 5.5. Cofactors Necessary for Blood Coagulation
  - 5.5.1. Vitamin K and Coagulation
  - 5.5.2. Prekallikrein
  - 5.5.3. High Molecular Weight Cininogen
  - 5.5.4. Von Willebrand Factor
- 5.6. Physiological Inhibitors of Coagulation
  - 5.6.1. Antithrombin
  - 5.6.2. Protein C - Protein S System
  - 5.6.3. Antitrypsins
  - 5.6.4. Antiplasmins
  - 5.6.5. Other Coagulation Inhibitor Proteins
- 5.7. Current Events in Pregnancy and Hemostasis
  - 5.7.1. Hemostasis Changes during Pregnancy
  - 5.7.2. Fibrinolysis Changes during Pregnancy
- 5.8. New Developments in Hemostasis in Hepatic Insufficiency and Renal Insufficiency
  - 5.8.1. Acute Hepatic Insufficiency and Hemostatic Disorders
  - 5.8.2. Chronic Hepatic Insufficiency and Hemostatic Disorders
  - 5.8.3. Hemostasis in Chronic Kidney Disease
  - 5.8.4. Hemostasis in Patients with Renal Function Replacement Treatment

## **Module 6. Update on Coagulation, Thrombosis, and Fibrinolysis Tests**

- 6.1. Primary and Secondary Hemostasis Evaluation Tests
  - 6.1.1. Tests to Assess the Role of the Vascular Endothelium
  - 6.1.2. Tests to Assess the Role of Platelets in Hemostasis
  - 6.1.3. Tests that Assess the Role of Coagulation Factors in the Enzymatic Cascade
- 6.2. Interpretation of Prothrombin, Thrombin, and Activated Thromboplastin Times
  - 6.2.1. Prothrombin Time Interpretation
  - 6.2.2. Thrombin Time Interpretation
  - 6.2.3. Interpretation of Activated Thromboplastin Time
- 6.3. Usefulness of Thromboelastography: Its Current Role
  - 6.3.1. Definition
  - 6.3.2. Use
  - 6.3.3. Interpretation
- 6.4. Fibrinolysis Tests: The Mediators of Tissue Reperfusion
  - 6.4.1. Tests that Assess Fibrinolysis
  - 6.4.2. Uses
  - 6.4.3. Interpretation
- 6.5. Diagnosis of Hemophilia: Traditional and the Latest Techniques
  - 6.5.1. Types of Hemophilia
  - 6.5.2. Tests to Diagnose Hemophilia
- 6.6. Monitoring Coagulation in Patients with Critical Bleeding Disorders
  - 6.6.1. Hemostasis in Critically Ill Patients
  - 6.6.2. Tests for Monitoring Bleeding Disorders in Critically Ill Patients
- 6.7. Laboratory Monitoring of Patients on Oral Anticoagulants
  - 6.7.1. Traditional and New Oral Anticoagulants
  - 6.7.2. Evidence for the follow-up of patients on direct oral anticoagulants
- 6.8. Laboratory Monitoring in Patients Treated with Heparins
  - 6.8.1. Heparins in Anticoagulant Treatment
  - 6.8.2. Tests for Monitoring Heparin Treatment

**Module 7.** New Developments in Major Bleeding Disorders

- 7.1. Vascular Hemorrhagic Disorders
  - 7.1.1. Definition
  - 7.1.2. Epidemiology
  - 7.1.3. Clinical Manifestations
  - 7.1.4. Diagnostic Difficulties
  - 7.1.5. Treatment Developments
- 7.2. Platelet Hemorrhagic Disorders
  - 7.2.1. Definition
  - 7.2.2. Epidemiology and Etiology
  - 7.2.3. Clinical Manifestations
  - 7.2.4. Diagnostic Complexities
  - 7.2.5. New Treatment Approaches
- 7.3. Hemophilia
  - 7.3.1. Definition
  - 7.3.2. Epidemiology
  - 7.3.3. Clinical Manifestations
  - 7.3.4. Diagnosis
  - 7.3.5. Treatment and Current Issues in Electrical Therapy
- 7.4. Von Willebrand Disease: Diagnostic and Therapeutic Challenge
  - 7.4.1. Definition
  - 7.4.2. Epidemiology
  - 7.4.3. Clinical Manifestations
  - 7.4.4. Diagnosis by Screening Tests
  - 7.4.5. Treatment





- 7.5. Hemorrhagic Disorders due to Vitamin K Deficiency
  - 7.5.1. Definition
  - 7.5.2. Epidemiology
  - 7.5.3. Clinical Manifestations
  - 7.5.4. Etiological Diagnosis
  - 7.5.5. Treatment Plans
- 7.6. Hemorrhagic Disorders due to Excess Anticoagulants
  - 7.6.1. Definition
  - 7.6.2. Epidemiology
  - 7.6.3. Clinical Manifestations
  - 7.6.4. Diagnostic Tests
  - 7.6.5. Treatment Complexities
- 7.7. Acquired Hemorrhagic Disorders
  - 7.7.1. Definition
  - 7.7.2. Epidemiology
  - 7.7.3. Clinical Manifestations
  - 7.7.4. Diagnosis: The Role of Necessary Tests
  - 7.7.5. Treatment
- 7.8. Disseminated Intravascular Coagulation: Recent Findings
  - 7.8.1. Definition
  - 7.8.2. Epidemiology and Etiology
  - 7.8.3. Clinical Manifestations
  - 7.8.4. Use of Diagnostic Tests
  - 7.8.5. Alternative Treatments

**Module 8.** Update on Antihemorrhagics

- 8.1. Antihemorrhagic Drugs
  - 8.1.1. Definitions
  - 8.1.2. Main Drugs
  - 8.1.3. Mechanism of Action
  - 8.1.4. Main Indications
- 8.2. Use of Vitamin K in Hemorrhagic Disorders
  - 8.2.1. Indication of Vitamin K in Hemorrhagic Disorders
  - 8.2.2. Pharmacokinetics and Pharmacodynamics
  - 8.2.3. Presentation and Dosage
- 8.3. Coagulation Factor Concentrate
  - 8.3.1. Therapeutic indications
  - 8.3.2. Pharmacokinetics and Pharmacodynamics
  - 8.3.3. Presentation and Dosage
- 8.4. Use of Fresh Frozen Plasma and Protamine Sulfate
  - 8.4.1. Therapeutic indications
  - 8.4.2. Pharmacokinetics and Pharmacodynamics
  - 8.4.3. Presentation and Dosage
- 8.5. Latest Recommendations for the Use of Platelets
  - 8.5.1. Therapeutic indications
  - 8.5.2. Pharmacokinetics and Pharmacodynamics
  - 8.5.3. Presentation and Dosage
- 8.6. Platelet Aggregation Inhibitors: The Reality of Use
  - 8.6.1. Therapeutic indications
  - 8.6.2. Pharmacokinetics and Pharmacodynamics
  - 8.6.3. Presentation and Dosage
- 8.7. Capillary Protective and Hemostatic Vasoconstrictor Drugs
  - 8.7.1. Therapeutic indications
  - 8.7.2. Pharmacokinetics and Pharmacodynamics
  - 8.7.3. Presentation and Dosage
- 8.8. Antifibrinolytics
  - 8.8.1. Therapeutic indications
  - 8.8.2. Pharmacokinetics and Pharmacodynamics
  - 8.8.3. Presentation and Dosage

**Module 9.** Advances in leukemias, lymphomas and other oncohematological diseases

- 9.1. Hodgkin's Lymphoma
  - 9.1.1. Epidemiology
  - 9.1.2. Typification and Immunophenotyping
  - 9.1.3. Clinical Manifestations
  - 9.1.4. Diagnosis and Staging
  - 9.1.5. Current Treatment
- 9.2. Non-Hodgkin's Lymphomas
  - 9.2.1. Epidemiology
  - 9.2.2. Typification and Immunophenotyping
  - 9.2.3. Clinical Manifestations
  - 9.2.4. Diagnosis and Staging
  - 9.2.5. Current Treatment
- 9.3. Acute Lymphocytic Leukemia
  - 9.3.1. Epidemiology
  - 9.3.2. Immunophenotype
  - 9.3.3. Clinical Manifestations
  - 9.3.4. Diagnosis
  - 9.3.5. Current Treatment Alternatives
- 9.4. Acute Nonlymphocytic Leukemia
  - 9.4.1. Epidemiology
  - 9.4.2. Immunophenotype
  - 9.4.3. Clinical Manifestations
  - 9.4.4. Diagnosis
  - 9.4.5. Current Treatment Alternatives
- 9.5. Chronic Myeloid Leukemia
  - 9.5.1. Epidemiology
  - 9.5.2. Immunophenotype
  - 9.5.3. Clinical Manifestations
  - 9.5.4. Diagnosis
  - 9.5.5. Current Treatment

- 9.6. Chronic Lymphocytic Leukemia
  - 9.6.1. Epidemiology
  - 9.6.2. Immunophenotype
  - 9.6.3. Clinical Manifestations
  - 9.6.4. Diagnosis
  - 9.6.5. Current Treatment

## **Module 10.** Plasma Cell Dyscrasias Update

- 10.1. Updated Approach to the Management of Multiple Myeloma
  - 10.1.1. Definition
  - 10.1.2. Epidemiology
  - 10.1.3. Clinical Manifestations
  - 10.1.4. Diagnosis and Staging
  - 10.1.5. Review of Treatment and New Paradigms of Autologous Transplantation
- 10.2. Solitary Plasmacytoma.
  - 10.2.1. Definition
  - 10.2.2. Epidemiology
  - 10.2.3. Clinical Manifestations
  - 10.2.4. Diagnosis
  - 10.2.5. Alternative Treatments
- 10.3. Waldenström's Macroglobulinemia
  - 10.3.1. Definition
  - 10.3.2. Epidemiology
  - 10.3.3. Clinical Manifestations
  - 10.3.4. Diagnosis
  - 10.3.5. New Treatments
- 10.4. Heavy Chain Disease
  - 10.4.1. Definition
  - 10.4.2. Epidemiology
  - 10.4.3. Clinical Manifestations
  - 10.4.4. Diagnosis
  - 10.4.5. Treatment

- 10.5. Monoclonal Gammopathy of Uncertain Significance

- 10.5.1. Definition
- 10.5.2. Epidemiology
- 10.5.3. Clinical Manifestations
- 10.5.4. Diagnosis
- 10.5.5. New Treatments

- 10.6. Amyloidosis

- 10.6.1. Definition
- 10.6.2. Epidemiology
- 10.6.3. Clinical Manifestations
- 10.6.4. Diagnosis
- 10.6.5. Current Treatments

## **Module 11.** New developments in general therapeutics of hematological diseases

- 11.1. Antineoplastic Agents
  - 11.1.1. Groups
  - 11.1.2. Mechanisms of action
  - 11.1.3. Pharmacodynamics
  - 11.1.4. Pharmacokinetics
  - 11.1.5. Dose and Presentation
  - 11.1.6. Adverse Effects
- 11.2. Treatment of Infections in Hematology Patients
  - 11.2.1. Febrile Neutropenic Patients
  - 11.2.2. Most frequent infections in the hematologic patient.
  - 11.2.3. Most Frequently Used Antibiotic Treatments
- 11.3. Hematopoietic Progenitor Cell Transplantation
  - 11.3.1. General Concepts
  - 11.3.2. Indications
  - 11.3.3. Results and Impact

# tech 38 | Educational Plan

- 11.4. Methods and Indications for Cell Therapy
  - 11.4.1. General Concepts
  - 11.4.2. Types of Cell Therapy
  - 11.4.3. Indications
  - 11.4.4. Results and Impact
- 11.5. Principles of Gene Therapy
  - 11.5.1. General Concepts
  - 11.5.2. Indications
  - 11.5.3. Results and Future Impact
- 11.6. Monoclonal Antibodies in Hematological Malignancies
  - 11.6.1. General Principles
  - 11.6.2. Indications
  - 11.6.3. Impact of Use
- 11.7. Innovative CAR-T Cell Treatment of Hematological Malignancies
  - 11.7.1. General Principles
  - 11.7.2. Indications
  - 11.7.3. Impact of Use
- 11.8. Palliative Care for Hematology Patients
  - 11.8.1. General Concepts
  - 11.8.2. Treatment of the Main Symptoms in Oncohematology Patients
  - 11.8.3. Palliative care in the end-stage patient and end-of-life care



## Module 12. Update on Transfusion Medicine and Hematopoietic Cell Transplantation

- 12.1. Red Blood Cell Immunology
  - 12.1.1. General Concepts
  - 12.1.2. Blood Groups
  - 12.1.3. Allorecognition/Alloresponse in Transfusion
- 12.2. Immunology of Leukocytes, Platelets, and Plasma Components
  - 12.2.1. General Concepts
  - 12.2.2. Leukocyte Immunology
  - 12.2.3. Immunology of Platelets and Plasma Components
- 12.3. Hemolytic Disease in Fetuses and Newborns
  - 12.3.1. Definition
  - 12.3.2. Epidemiology
  - 12.3.3. Clinical Manifestations
  - 12.3.4. Diagnosis
  - 12.3.5. Treatment
- 12.4. Collection, Study, and Preservation of Blood and Blood Components
  - 12.4.1. Methods of Obtaining Blood and Blood Derivatives
  - 12.4.2. Preservation of Blood and Blood Derivatives
  - 12.4.3. Care During Transport
- 12.5. Indications, efficacy and complications of blood, blood components and blood products transfusion.
  - 12.5.1. General Principles
  - 12.5.2. Indications
  - 12.5.3. Contraindications
  - 12.5.4. Complications
- 12.6. Autotransfusion
  - 12.6.1. General Principles
  - 12.6.2. Indications
  - 12.6.3. Contraindications
  - 12.6.4. Complications
- 12.7. Cell and Plasma Apheresis
  - 12.7.1. General Principles
  - 12.7.2. Types of Apheresis
  - 12.7.3. Indications
  - 12.7.4. Contraindications
- 12.8. Legislation concerning transfusion medicine
  - 12.8.1. Ethical Aspects of Transfusion Medicine
  - 12.8.2. Legal Aspects of Transfusion Medicine

“

*This program will allow you to advance your career into transfusion medicine in a straightforward and effective way”*

07

# Clinical Internship

After completing the period of theoretical content online, the program proposes an Internship Program in a recognized clinic for its prestige in the study of hematology and hemotherapy. During the course of the course, the specialist will have the professional support of experts in the sector and will be able to solve the doubts of real cases in situ.

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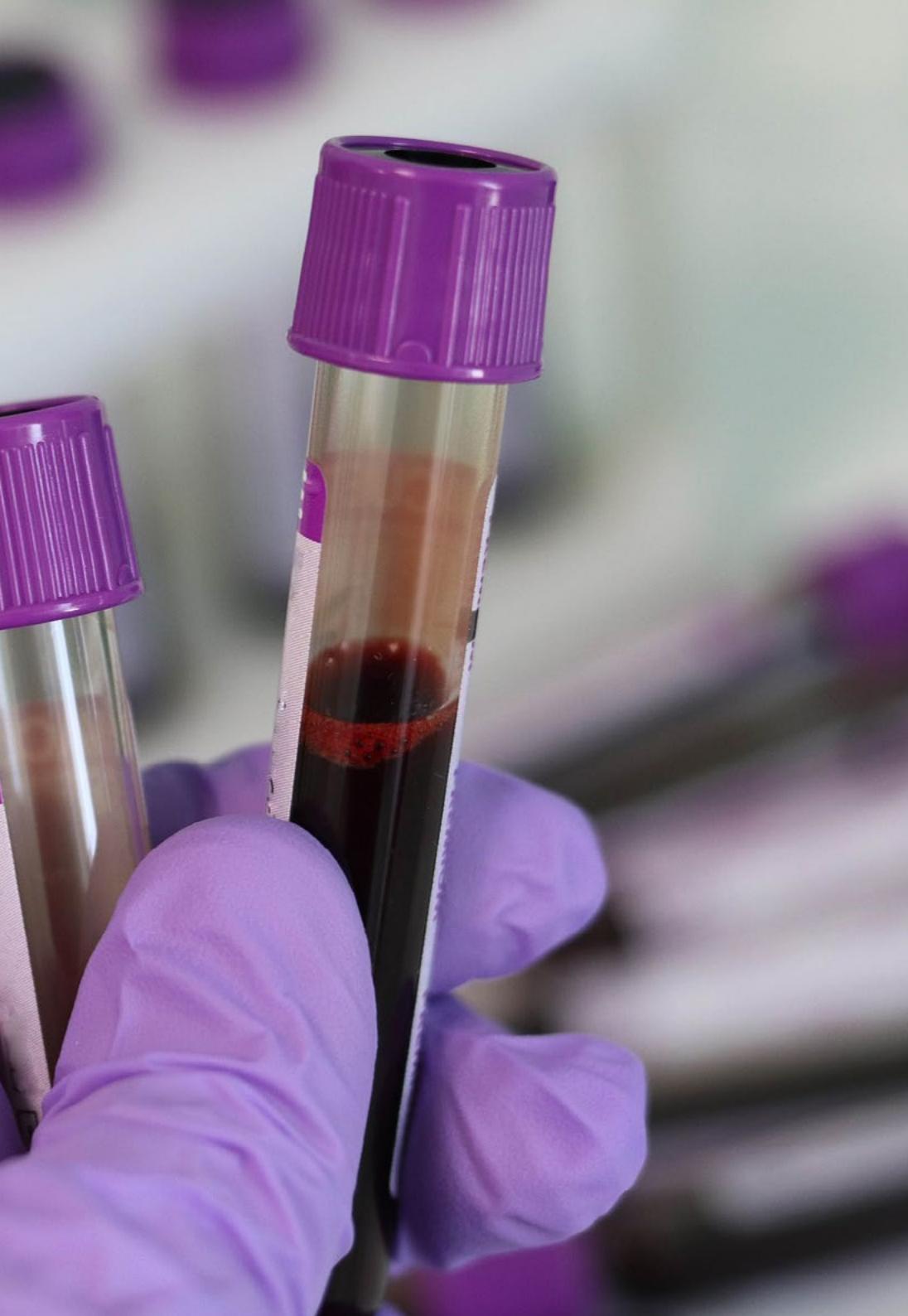
*Broaden your professional knowledge by being part of a clinical team that daily cares for a multitude of patients with hematologic cases"*

The Internship Program of this hematology and hemotherapy program takes place over 3 weeks with a thorough preparation in the field of blood diseases. These are 8-hour days from Monday to Friday, which will be guided by clinical experts. In this way, the physician will deepen in the tools for diagnosis and prevention of hematological tumors by directly treating patients with various pathologies.

These practices are proposed in view of the rapid clinical advances that have been made on digital laboratory research focused on hematology and hemotherapy. This is the only way for the specialist to analyze first hand, the update on anemias, such as the mechanism of erythropoiesis, erythroid differentiation and maturation. You will also be provided with all the clinical material so that you can put your previous theoretical knowledge into practice with real patients.

The internship will be carried out with the active participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of teachers and other training partners that facilitate teamwork and multidisciplinary integration as transversal competencies for Haematology and haemotherapy praxis (learning to be and learning to relate).





The procedures described below will form the basis of the practical part of the training, and their implementation is subject to both the suitability of the patients Own and the availability of the center and its workload, with the proposed activities being as follows:

Module	Practical Activity
Advanced laboratory techniques in hematology and hemotherapy	<ul style="list-style-type: none"><li>To test the use of massive exploitation of large databases and AI algorithms in the diagnostic and prognostic algorithms in the diagnostic and prognostic field of the clinical laboratory</li><li>Address diagnostic techniques for anemic syndrome and hemolysis testing</li><li>Use basic techniques of cytogenetics and molecular biology, as well as new techniques of hemostasis and thrombosis</li><li>Use immunohematology and therapeutic apheresis techniques such as plasmapheresis, leukapheresis, erythroapheresis, thrombocytiapheresis, etc</li><li>Manage current techniques of collection, manipulation and preservation of hematopoietic progenitors</li><li>Participate in the clinical diagnosis of spinal cord aplasia</li><li>Verify the epidemiology and etiology of agranulocytosis</li><li>To ascertain the clinical manifestation of polycythemia vera and possible current treatment alternatives of current treatment</li><li>Employing diagnostic methods for essential thrombocythemia and chronic idiopathic myelofibrosis</li><li>Acting on the clinical manifestation of mastocytosis</li></ul>

<b>Diagnostic Techniques and treatment of anemias</b>	Manage preventive methods for symptoms of anemia by organic systems
	Participate in the diagnosis of pure red cell aplasia and current alternative treatment techniques
	Addressing the Treatment of Congenital Dyserythropoietic Anemias
	Perform a diagnostic approach to megaloblastic anemias and hemolytic anemias
	Manage the different treatment alternatives for anemias due to hemoglobin disorders
<b>Module</b>	<b>Practical Activity</b>
<b>Coagulation, thrombosis, fibrinolysis and hemostasis physiology tests</b>	Identify cases of primary and secondary hemostasis, their diagnostic methods and follow-up
	Control the use of physiological inhibitors of coagulation: antithrombin, protein C and S system, antitrypsins, antiplasmin, etc
	Identify changes in hemostasis and fibrinolysis during pregnancy
	Use thromboelastography and thromboelastometry in patient monitoring
	Interpret Fibrinolysis Tests: The Mediators of Tissue Reperfusion
	Apply diagnostic methods for hemophilias
	Monitoring coagulation in patients with critical bleeding disorders
	Follow-up and testing of patients on direct oral anticoagulants
	Verify laboratory monitoring in patients treated with heparins





<b>News in major bleeding disorders and their treatments</b>	Verify the clinical manifestations of Haemophilia
	Perform screening test diagnosis of von Willebrand's disease
	Check clinical manifestations of bleeding disorders due to vitamin K deficiency
	Perform diagnostic testing for bleeding disorders due to excess anticoagulants and diagnosis of acquired bleeding disorders
	Verify the usefulness of diagnostic tests for disseminated intravascular coagulation
	Apply specific treatment methods for bleeding disorders
Module	<b>Practical Activity</b>
<b>Therapeutic approach to hematological diseases and plasma cell dyscrasias</b>	Apply diagnostic methods specific to multiple myeloma
	Verify new treatments and diagnostic methods for solitary plasmacytoma, Waldenström macroglobulinemia, heavy chain diseases and monoclonal gammopathy of uncertain and monoclonal gammopathy of uncertain significance
	Apply therapy and diagnosis in amyloidosis
	Recognize the pharmacokinetics of antineoplastic agents
	Perform indications in case of hematopoietic progenitor cell transplantation
	Manage the Methods and Indications of Cell Therapy
	Test the indications for monoclonal antibodies in hematologic malignancies
	Addressing CAR-T cell treatment of hematologic malignancies
	Apply the Palliative Care for Hematology Patients
	Verify red cell immunology by analyzing the immunology of leukocytes, platelets and plasma components
<b>Advances in transfusion medicine and hematopoietic cell transplantation</b>	Apply diagnostic methods and treatment of hemolytic disease of the fetus and the newborn
	Address the process of preservation of blood and blood products, paying special attention to the efficacy and complications during the transfusion of blood, blood components and blood products
	Recognize the contraindications of autotransfusion in those cases where they may occur

## 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.

For this purpose, this educational entity undertakes to take out a liability insurance policy to cover any eventuality that may arise during the stay at the internship center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. That way professionals will not have to worry if they have to deal with an unexpected situation and will be covered until the end of the practical program at the center.



## General Conditions of the Internship Program

The general terms and conditions of the internship program agreement shall be as follows:

**1. TUTORING:** During the Hybrid Professional Master's Degree, 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 Hybrid Professional Master's Degree, 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 Hybrid Professional Master's Degree will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** The Hybrid Professional Master's Degree shall not constitute an employment relationship of any kind.

**6. PREVIOUS STUDIES:** Some centers may require a certificate of prior education for the Hybrid Professional Master's Degree. 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. NOT INCLUDED:** The Hybrid Professional Master's Degree 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.

08

## Where Can I Do the Clinical Internship?

This Hybrid Professional Master's Degree program integrates in its itinerary the stay in a recognized hospital clinic, where the specialist will be able to complete his academic instruction and will address all practical issues. This extension of the degree will take place during 3 weeks and will bring the hematologist closer to the daily challenges of the profession by facing real cases of hematologic pathologies.



“

Extend the theoretical academic endowment  
with a stay in a hospital center, which will  
help you in your daily clinical work”



Medicine.

### Hospital Recoletas Campo Grande

Country Spain City Valladolid

Address: Pl. de Colón, s/n, 47007 Valladolid

Clinical center specialized in multidisciplinary healthcare

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**Related internship programs:**

- Intensive Care Nursing
- Gynecologic Oncology



Medicine.

### Hospital HM Modelo

Country Spain City La Coruña

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

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

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**Related internship programs:**

- Anaesthesiology and Resuscitation
- Palliative Care



Medicine.

### Hospital Maternidad HM Belén

Country Spain City La Coruña

Address: R. Filantropía, 3, 15011, A Coruña

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

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**Related internship programs:**

- Update in Assisted Reproduction
- Hospitals and Health Services Management



Medicine.

### Hospital HM Rosaleda

Country Spain City La Coruña

Address: Rúa de Santiago León de Caracas, 1, 15701, Santiago de Compostela, A Coruña

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

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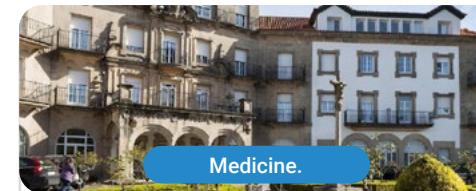
**Related internship programs:**

- Hair Transplantation
- Orthodontics and Dentofacial Orthopedics





Where Can I Do the Clinical Internship? | 51 tech



### Hospital HM La Esperanza

Country: Spain      City: La Coruña

Address: Av. das Burgas, 2, 15705, Santiago de Compostela, A Coruña

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

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Related internship programs:

- Oncology Nursing
- Clinical Ophthalmology



### Hospital HM San Francisco

Country: Spain      City: León

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

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

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Related internship programs:

- Update in Anesthesiology and Resuscitation
- Nursing in the Traumatology Service



### Hospital HM Regla

Country: Spain      City: León

Address: Calle Cardenal Landázuri, 2, 24003, León

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

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Related internship programs:

- Update on Psychiatric Treatment in Minor Patients



### Hospital HM Nou Delfos

Country: Spain      City: Barcelona

Address: Avinguda de Vallcarca, 151, 08023 Barcelona

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

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Related internship programs:

- Aesthetic Medicine
- Clinical Nutrition in Medicine



### Hospital HM Madrid

Country Spain City Madrid

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

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

- Related internship programs:**
- Palliative Care
  - Anaesthesiology and Resuscitation



### Hospital HM Montepríncipe

Country Spain City Madrid

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

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

- Related internship programs:**
- Palliative Care
  - Aesthetic Medicine



### Hospital HM Torrelodones

Country Spain City Madrid

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

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

- Related internship programs:**
- Anaesthesiology and Resuscitation
  - Palliative Care



### Hospital HM Nuevo Belén

Country Spain City Madrid

Address: Calle José Silva, 7, 28043, Madrid

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

- Related internship programs:**
- General and Digestive System Surgery
  - Clinical Nutrition in Medicine



### Medicine.

#### Hospital HM Puerta del Sur

Country Spain City Madrid

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

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

- Related internship programs:**
- Palliative Care
  - Clinical Ophthalmology



### Medicine.

#### HM CIOCC - Centro Integral Oncológico Clara Campal

Country Spain City Madrid

Address: Calle de Oña, 10, 28050, Madrid

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

- Related internship programs:**
- Gynecologic Oncology
  - Clinical Ophthalmology



### Medicine.

#### HM CIOCC Barcelona

Country Spain City Barcelona

Address: Avenida de Vallcarca, 151, 08023, Barcelona

Network of private clinics, hospitals and specialized centers distributed all over the Spanish Geography.

- Related internship programs:**
- Advances in Hematology and Hemotherapy
  - Oncology Nursing



### Medicine.

#### HM CIOCC Galicia

Country Spain City La Coruña

Address: Avenida das Burgas, 2, 15705, Santiago de Compostela

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

- Related internship programs:**
- Gynecologic Oncology
  - Clinical Ophthalmology



### Policlínico HM Arapiles

Country

Spain

City

Madrid

Address: C. de Arapiles, 8, 28015, Madrid

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

**Related internship programs:**

- Anaesthesiology and Resuscitation
- Pediatric Dentistry



### Policlínico HM Cruz Verde

Country

Spain

City

Madrid

Address: Plaza de la Cruz Verde, 1-3, 28807, Alcalá de Henares, Madrid

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

**Related internship programs:**

- Advanced Clinical Podiatry
- Optical Technologies and Clinical Optometry



### Policlínico HM Rosaleda Lalín

Country

Spain

City

Pontevedra

Address: Av. Buenos Aires, 102, 36500, Lalín, Pontevedra

Network of private clinics, hospitals and specialized centers distributed all over the Spanish geography.

**Related internship programs:**

- Advances in Hematology and Hemotherapy
- Neurological Physiotherapy

09

# 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.



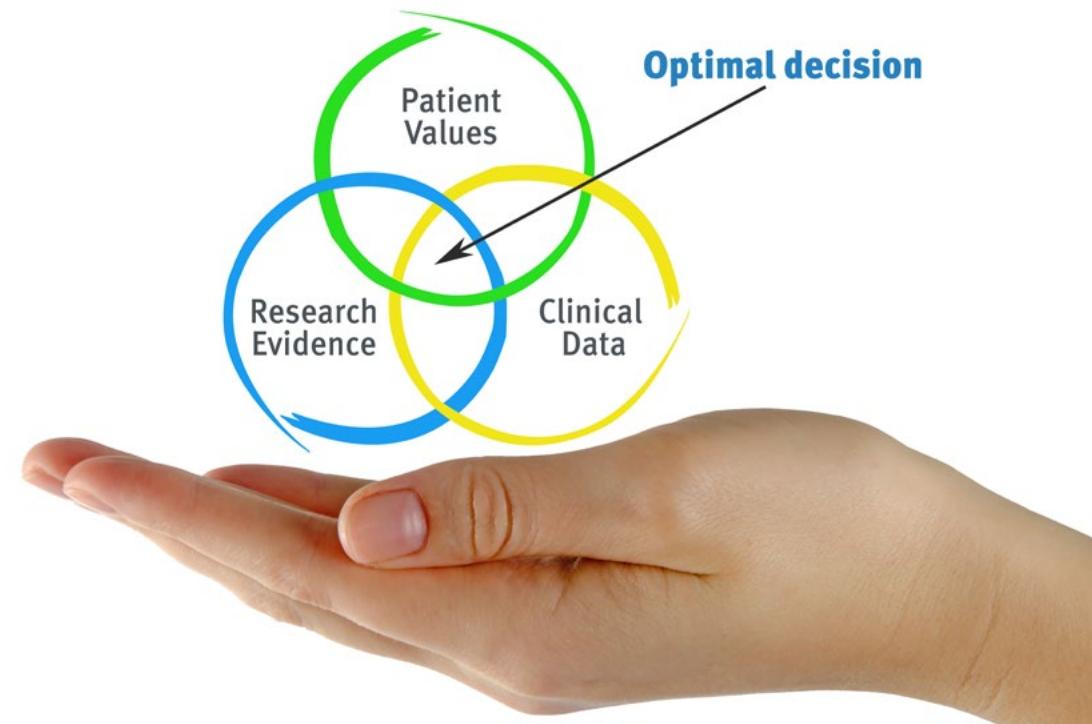
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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

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

“

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

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

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



## Relearning Methodology

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

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

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





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

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

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

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

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

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



#### Study Material

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

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



#### Surgical Techniques and Procedures on Video

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



#### Interactive Summaries

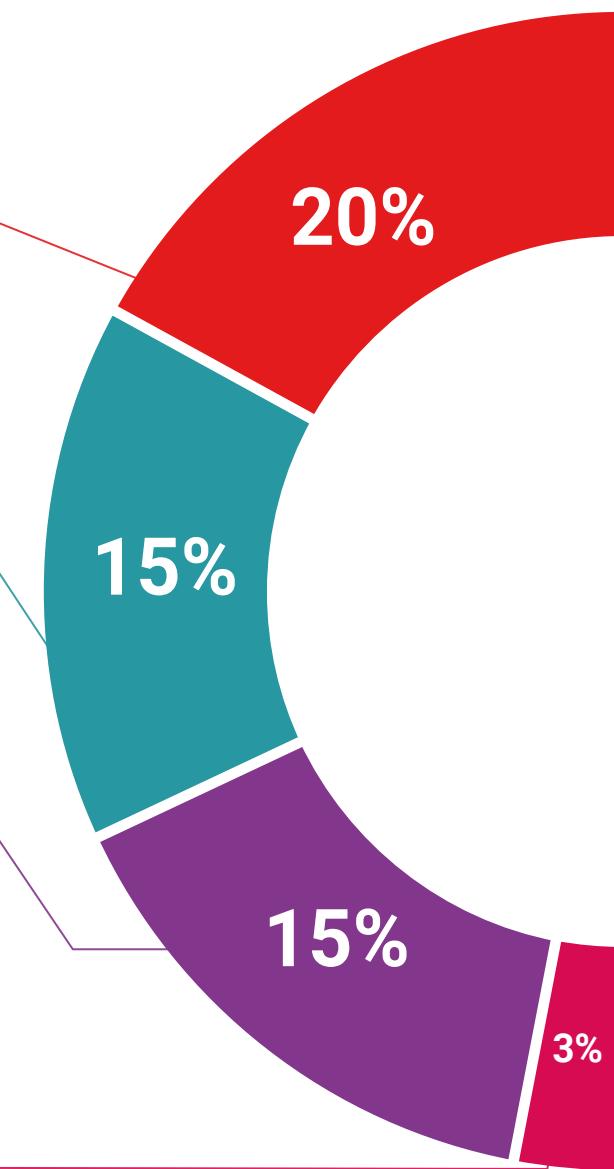
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

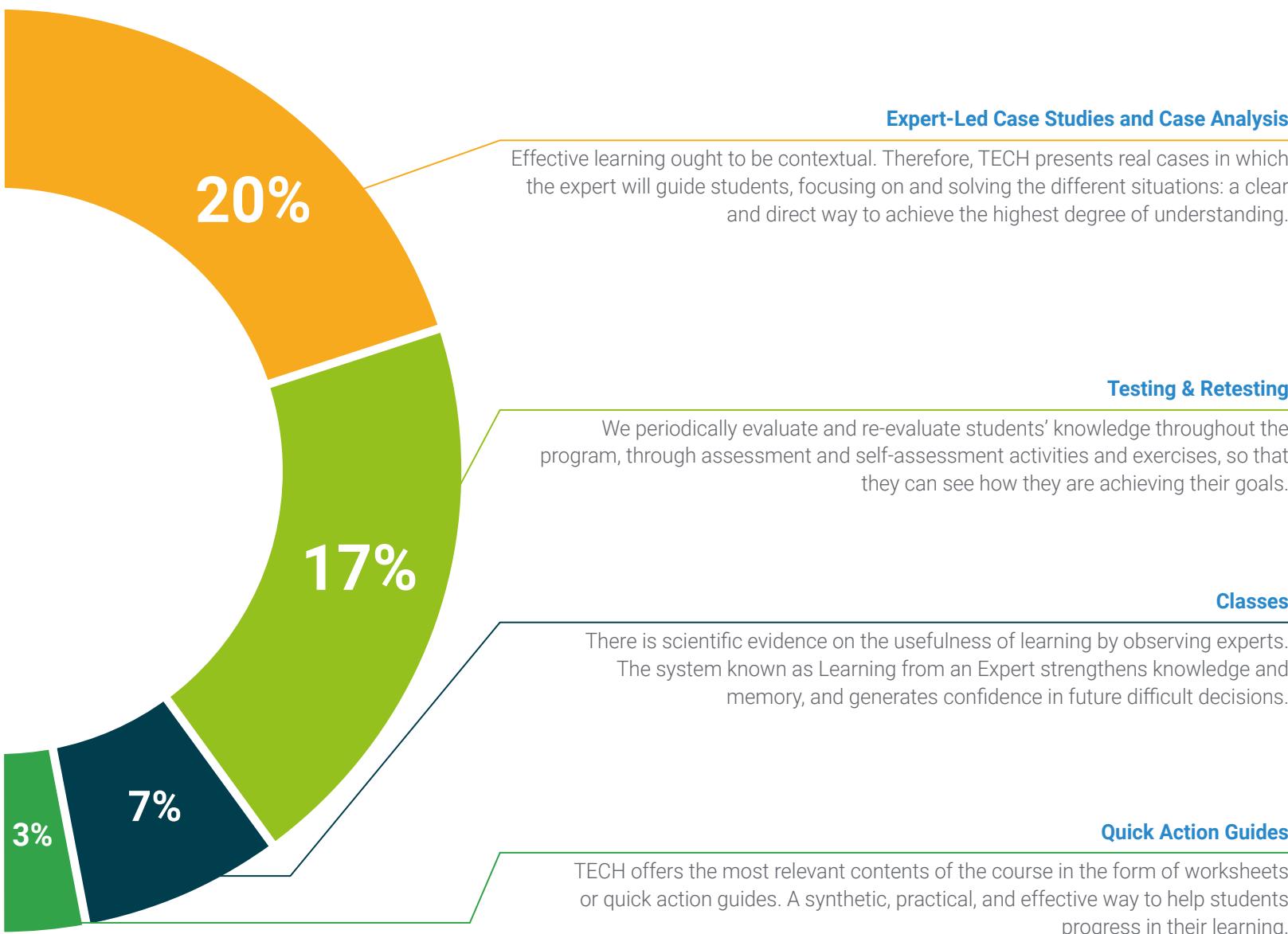
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story"



#### Additional Reading

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





10

# Certificate

The Hybrid Professional Master's Degree in Advances in Hematology and Hemotherapy guarantees students, in addition to the most rigorous and up-to-date education, access to a Hybrid Professional Master's Degree diploma issued by TECH Technological University.



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*Successfully complete this program and receive your university certificate without having to travel or fill out laborious paperwork"*

This **Hybrid Professional Master's Degree in Advances in Haematology and haemotherapy** contains the most complete and up-to-date program on the professional and educational field.

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

In addition to the diploma, students will be able to obtain an academic transcript, as well as a certificate outlining the contents of the program. In order to do so, students should contact their academic advisor, who will provide them with all the necessary information.



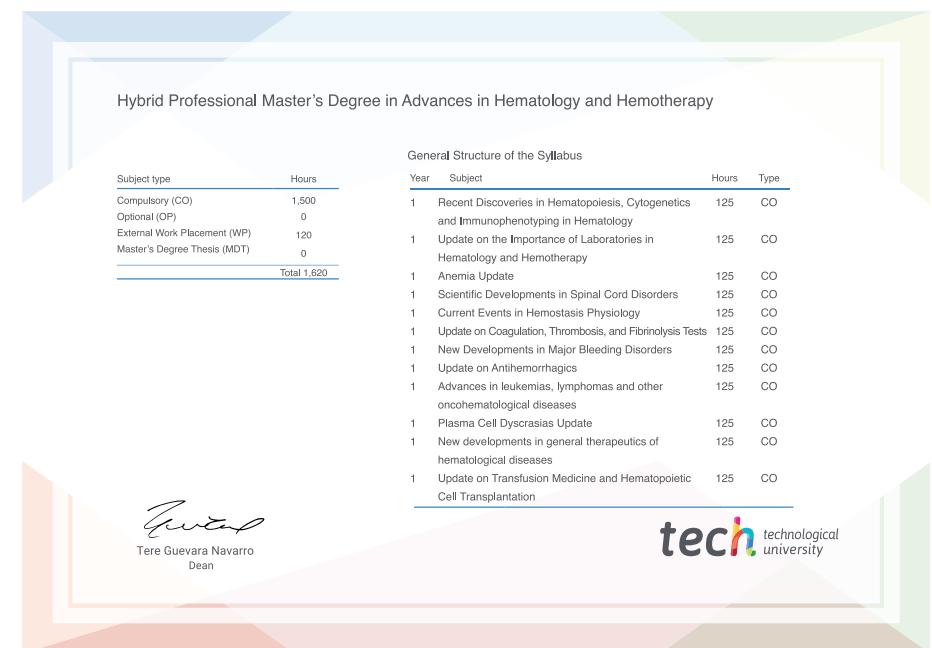
Certification: **Hybrid Professional Master's Degree in Advances in Hematology and Hemotherapy**

Course Modality: **Hybrid (Online + Clinical Internship)**

Duration: **12 months**

Certificate: **TECH Technological University**

Teaching Hours: **1,620 h.**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.



## Hybrid Professional Master's Degree Advances in Hematology and Hemotherapy

Course Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.

# Hybrid Professional Master's Degree

Advances in Hematology  
and Hemotherapy



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4000RPM  
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**tech** technological  
university