

# Professional Master's Degree

## Advances in Hematology and Hemotherapy



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

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Technological University
- » Dedication: 8h/week
- » Schedule: at your own pace
- » Exams: online

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

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# 01

# Introduction

Scientific medical advances in the last 10 years have helped to dispel the notion that Hematology is confined to mere Hematology, and, in fact, this program covers a range of areas within the field (hematological oncology, genetics, immunotherapy, cardiovascular risks, blood transfusions, bone marrow transplants, anticoagulants, anemias, artificial blood etc.) so that hematology patients can be provided with excellent care incorporating the most recent and innovative medical advances.





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*Learn about the latest advances in this specialist field and get yourself up to date in order to provide the best patient care”*

At present, the field of Hematology is pioneering innovation in diagnosis and treatment, and it should be noted that hematologists are leaders in the clinical application of immunotherapy in the fight against the different hematological cancers.

Various international scientific societies involved with Hematology strive to swiftly incorporate the results of biomedical research into clinical practice, especially the treatment of hematological malignancies (blood cancers), but also iron deficiency and anemias, the administration of direct-acting oral anticoagulants-DOACs, bone marrow transplants and, in the long-term, research focused on obtaining artificial blood, with the ultimate aim of ensuring that these techniques are incorporated into the national healthcare provision as soon as possible.

In terms of knowledge and technology, Hematology and Hemotherapy is one of the fastest progressing medical disciplines in recent decades, thanks to the integration of biological and clinical findings, leading to a better understanding of disease mechanisms, thereby facilitating the development of more appropriate clinical action guidelines. All of this has contributed to hematology and hemotherapy reaching a remarkable level of prominence and justifying its future as an integrated speciality, with this program representing an ideal framework for building expertise in this area.

This Professional Master's Degree in Advances in Hematology and Hemotherapy comprises a complete teaching program that establishes it as is a high-level scientific course aimed at healthcare professionals who care for patients or populations with blood diseases on a daily basis, incorporating the latest advances in research and sound scientific evidence. Additionally, this program is supported by a multidisciplinary approach to topics, which allows for learning and professional development in a range of areas.

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

- More than 75 clinical cases presented by hematology experts. Graphic, schematic, and practical contents which provide scientific and practical information on the disciplines that are essential for professional
- Diagnostic-therapeutic developments on assessment, diagnosis, and treatment for hematology patients
- Practical exercises where a self-evaluation process can be carried out to improve learning
- Clinical and diagnostic imaging test iconography
- An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course
- A special emphasis on evidence-based medicine and research methodologies in hematology
- All 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



*With the Professional Master's Degree in Advances in Hematology and Hemotherapy you will have the opportunity to update your knowledge in a comfortable way and without sacrificing the utmost scientific rigour"*

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*This Professional Master's Degree may be the best investment you can make in the selection of a refresher program for two reasons: in addition to updating your knowledge in Advances in Hematology and Hemotherapy, you will obtain a Professional Master's Degree from TECH Technological University"*

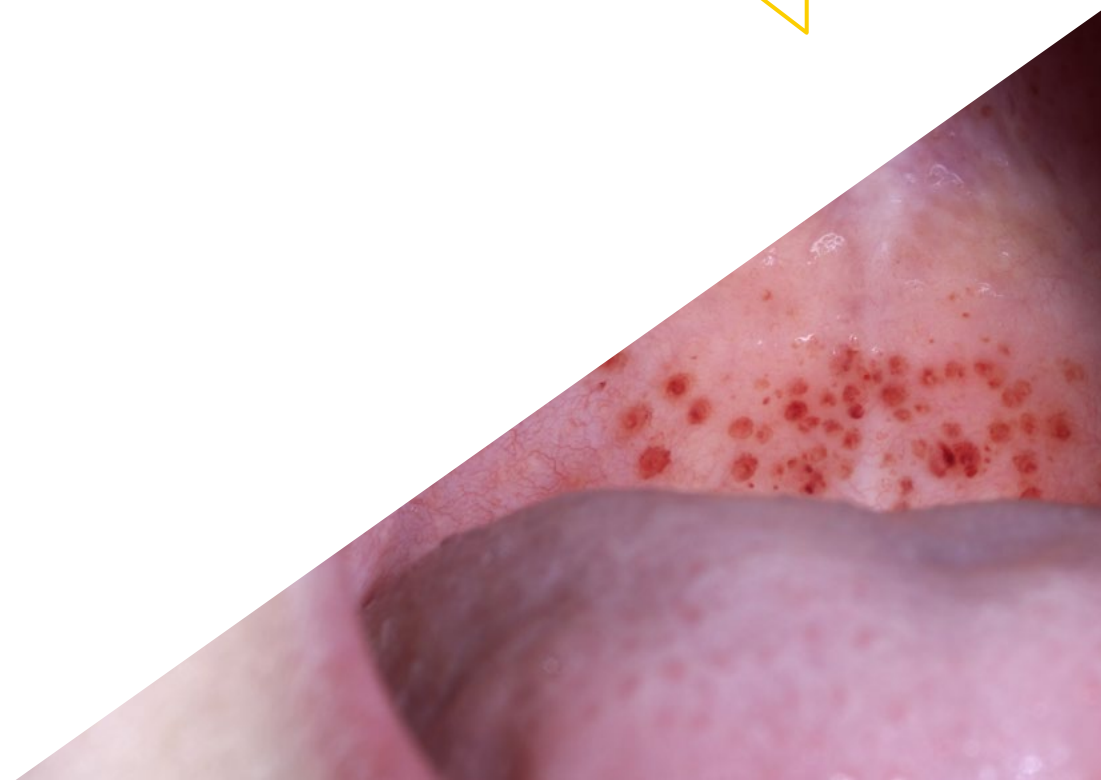
The teaching body is made up of respected and renowned professionals with extensive experience in healthcare, teaching, and research, who have worked in many countries where these diseases are prevalent.

The methodological design of this Professional Master's Degree has been developed by a multidisciplinary team of e-learning experts. It integrates the latest advances in educational technology for the creation of numerous multimedia educational tools that allow the professional to address real problems in their daily clinical practice, based primarily on the problem-based learning method. This will allow them to advance by acquiring knowledge and developing skills that will impact their future professional work.

This Professional Master's Degree is distinguished by the fact that all of the topics, as well as the videos, self-assessments, clinical cases and exams, have been thoroughly reviewed, updated, and integrated by the team of experts that make up the faculty, to ensure that the learning process is orderly and instructive and therefore achieves the program's objectives.

*This program offers instruction in simulated environments, which provides an immersive learning experience designed to prepare professionals for real-life situations.*

*It includes clinical cases to bring the program's degree as close as possible to the reality medical care.*



# 02 Objectives

The main aim of this Professional Master's Degree is to produce outstanding specialists, via the acquisition of the most up-to-date and innovative scientific knowledge in the field of hematology and hemotherapy, allowing them to develop the professional skills and competencies that will turn their daily clinical practice into a benchmark for implementing the best scientific discoveries in a critical, innovative, multidisciplinary and integrative way.







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*This program will provide you with a sense of assurance in your medical practice, which will help you grow personally and professionally”*



## General Objective

- Update the specialist's knowledge by teaching the latest scientific evidence in the diagnosis and treatment of hematological diseases, in order to develop measures to prevent, diagnose, treat, and rehabilitate such diseases, with a multidisciplinary and integrative approach that supports the highest quality medical care for managing and monitoring hematology patients

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*Don't miss this opportunity and catch up on advances in the treatment of hemorrhagic and thromboembolic diseases to incorporate them into your daily medical practice”*





## Specific Objectives

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- Provide students with advanced, in-depth, up-to-date, and multidisciplinary information that allows them to comprehensively approach the hematological health/disease process, ensuring proper treatment and the use of all appropriate therapeutic procedures
- Provide instruction and - practical/theoretical development that will ensure sound clinical diagnosis supported by the efficient use of diagnostic methods
- Explain the complex pathophysiologic and etiopathogenic interrelationships in the mechanisms of hematologic disease onset
- Get up to date in molecular and cellular biology, providing general concepts of modern molecular terminology, essential for future medical practice, both at clinical and diagnostic laboratory levels
- Get up to date in the aspects of Pathological Anatomy, Biochemistry, Immunology, Genetics, and Molecular Biology of hematologic diseases
- Look at epidemiological studies on morbimortality due to hematological disorders in depth
- Emphasize the role of the reasonable use of diagnostic technologies when studying these patients
- Describe the most important elements of the absorption, transportation, distribution, metabolism, and excretion of drugs used to treat these diseases
- Address, in detail and depth, the most up-to-date scientific evidence on the mechanisms of action, adverse effects, dosage, and use of drugs to treat these diseases
- Explain the pathophysiological and pathogenic interrelationships between each of these diseases in morbidity and mortality
- Get up to date on the epidemiology, etiopathogenesis, diagnosis, and treatment of the various hematological malignancies: myelodysplastic syndromes, acute myeloid and lymphoid leukemias, chronic myeloproliferative syndromes, Hodgkin and non-Hodgkin lymphomas, plasma cell dyscrasia. etc
- Explain the latest advances introduced in clinical practice on hematopoietic progenitor cell transplantation
- Discuss the importance of a comprehensive and integrated care approach across all disciplines involved in caring for these patients
- An in-depth look at the most innovative options for patient care and those in development
- Highlight the development of new drugs for the future and other treatment models to control these diseases
- Get up to date on the latest concepts of hemotherapy in the use of blood and blood products
- Highlight future challenges in the development of new diagnostic and treatment strategies to reduce morbidity and mortality

# 03 Skills

Once all the contents have been studied and the objectives of the Professional Degree Master's Degree in Advances in Hematology and Hemotherapy have been achieved, the healthcare professional will possess superior expertise, supporting their daily medical practice with today's most important scientific advances, using a multidisciplinary and integrative approach to provide comprehensive medical care for prevention, diagnosis, treatment and rehabilitation of the main causes of morbidity and mortality from these diseases worldwide, which will see them become a leading professional in their field.





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*With this program you will be equipped to master the new prevention, diagnostic, treatment, and rehabilitation procedures for hemorrhagic and thromboembolic diseases”*



## Basic Skills

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- Apply epidemiological and clinical methods in collective or individual care to resolve the main health problems related to hematologic diseases and hemotherapy
- Critically review the scientific literature on these diseases and in turn be able to communicate research results
- Collect, process, and analyze any scientific information for preventive, diagnostic, treatment, and rehabilitation decisions in the field of hematologic diseases and hemotherapy specifically, as well as health in general taken from a diverse range of clinical and epidemiological contexts
- Develop study skills required of today's professionals, who are obliged to constantly enhance their professional skills in line with the dizzying and accelerated advanced in scientific knowledge.



## General Skills

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- Enhance performance and expertise in comprehensive medical care for hematologic diseases and general patient care, through the in-depth study of the epidemiological, preventive, clinical, pathophysiological, diagnostic, therapeutic, and rehabilitation elements of these diseases
- Hone skills to manage, advise, or lead scientific research teams and multidisciplinary teams to study blood cell and hematopoietic organ disorders and the medications used to treat communities or individual patients
- Develop self-improvement skills, in addition to being able to provide training and professional development activities which make us of the high level of scientific and professional expertise acquired with this program
- Educate the public on preventative actions in order to acquire and develop a culture of prevention, based on healthy lifestyle choices



## Specific Skills

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- ♦ Master health determinants and their impact on morbidity and mortality rates of hematologic diseases
  - ♦ Identify and analyze the latest scientific information on hematology and hemotherapy, as well as associated diseases, in order to design plans and programs to manage them
  - ♦ Master different techniques of basic and automated hemacytometry, as well as hematological cytomorphology and cytochemistry
  - ♦ Master the special techniques of flow cytometry, and basic techniques of molecular biology and cytogenetics applied to hematopoietic processes
  - ♦ Diagnose these diseases in a timely manner from the clinical manifestations of patients in early stages to ensure proper treatment, rehabilitation, and control
  - ♦ Support the importance of integrated clinical-diagnostic-therapeutic discussion with the participation of all specialists associated in the care of these patients as an important measure in institutional medical care to provide better comprehensive care for these patients
  - ♦ Master the clinical, epidemiological, diagnostic, and therapeutic elements supported by the best scientific evidence available for these patients
  - ♦ Identify the fundamental aspects of pharmacokinetics and pharmacodynamics for the use of drugs for these diseases
  - ♦ Halt the progression of drug misuse, based on reasoned treatment and supported by the best scientific evidence
- ♦ Correctly use and interpret all diagnostic studies and other resources in patient care
  - ♦ Master the indications, management, and complications of patients undergoing allogeneic transplantation of hematopoietic progenitors from an unrelated donor
  - ♦ Advise pharmaceutical and biotechnology industry teams in the process of research and production of new drugs and alternative treatments for hematologic diseases and hemotherapy
  - ♦ Lead teams in health institutions, such as mortality review committee, quality of care, drug utilization
  - ♦ Develop normative or referential documents such as clinical practice guidelines or policies for the care of these patients



*Improve patient care by making the most of the information offered by the Professional Master's Degree in Advances in Hematology and Hemotherapy"*

# 04

# Course Management

Prestigious and renowned medical specialists with numerous publications, extensive teaching experience and professional experience in many countries, where many of the diseases studied have a high morbimortality, have participated in this program. The teaching team is made up of a multidisciplinary faculty from various medical disciplines, such as hematology, internal medicine, pediatrics, gynecology and obstetrics, anatomical pathology, and pharmacology who are involved in patient care.







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*Learn about the latest advances  
in hematology and hemotherapy  
from leading professionals”*

## 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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- Pediatrician specialized in hemato-oncology at the MSK Cancer Center - New York
- 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, Madrid
- ♦ PhD in Medicine from the Complutense University of Madrid
- ♦ Hematology Medical Specialist
- ♦ Director of the translational research group and the early clinical trials unit in hematology at 12 de Octubre Hospital
- ♦ More than 140 publications in international scientific journals
- ♦ President of AltumSequencing

## Professors

### Dr. Carreño Gómez-Tarragona, Gonzalo

- ♦ Specialist physician at the 12 de Octubre University Hospital
- ♦ Degree in Medicine. Autonomous University of Madrid. 2013
- ♦ Master's Degree in Hematopoietic Transplantation. University of Valencia. 2019
- ♦ Cytology Course in Myelodysplasia. Del Mar Hospital. 2017
- ♦ Teaching collaborator for the following subjects: Hematology and Hemotherapy, Degree of Medicine (Complutense University of Madrid); and Advances in Vascular Function, Degree of Medicine (Autonomous University of Madrid)
- ♦ Participation in the Clinical Research Ethics Committee at the 12 de Octubre University Hospital. 2019
- ♦ Participation in national and international conferences
- ♦ Distinction as Best Scientific Communication. VII National Research Conference for Undergraduate Students in Health Sciences. Complutense University of Madrid. 2013

### Dr. Sánchez Pina, José María

- ♦ Attending Physician in the area of hospitalization and hematopoietic transplantation. Member of the cell therapy group. Since 2017
- ♦ Degree in Medicine. University of Alcalá. 2006-2012
- ♦ Master's Degree in Hematopoietic Transplantation 4th edition University of Valencia
- ♦ Resident intern of Hematology and Hemotherapy at 12 de Octubre University Hospital in Madrid. 2013-2017
- ♦ Teaching collaborator in the Master's Degree in Translational Medicine. The Complutense University of Madrid; and Master's Degree in Organ and Tissue Transplants. European University of Madrid



**Dr. Rodríguez Rodríguez, Mario**

- ◆ Specialist in Thrombophilia and Hemostasis consultation and in basic and special coagulation laboratory at the 12 de Octubre University Hospital. Since June 2017
- ◆ Graduate in Medicine and Surgery from the Complutense University of Madrid. Class of 2006 - 2012
- ◆ Hematology on-call duty as an attending physician (FEA). Since June 2017
- ◆ Medical Intern Resident in Hematology and Hemotherapy at the 12 de Octubre University Hospital (21/05/2013 - 21/05/2017)
- ◆ Participation in quality work for ENAC accreditation in the coagulation laboratory at the 12 de Octubre University Hospital
- ◆ Usability study/evaluation of the cobas t711 coagulometer, Roche Diagnostics
- ◆ Participation in the following publications: "Evaluation of The MD Anderson Tumor Score for Diffuse Large B-cell Lymphoma in the Rituximab Era", "Clinical course and risk factors for mortality from COVID-19 inpatients with haematological malignancies" and "Thrombosis and antiphospholipid antibodies in patients with SARS-COV-2 infection (COVID-19)", among others

05

# Structure and Content

The teaching program has been created by a group of professors and medical professionals from various disciplines, with extensive medical, research and teaching experience in several countries in Africa, Central and South America, interested in integrating the latest and most up-to-date scientific knowledge in Hematology and Hemotherapy to ensure professional development to improve the daily clinical practice of professionals.





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*This Professional Master's Degree in Advances in Hematology and Hemotherapy contains the most complete and up-to-date scientific program on the market”*

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

- 1.1. Current Role of Hematopoietic Multipotent 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 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 Cultures 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. Anemic Syndrome Diagnostic Techniques: 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 Anemia
- 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 Procurement, Handling and Preservation of Hematopoietic Progenitor Cells
  - 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

### Module 3. Update on Anemia

- 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 Anemia
  - 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, Iron Metabolism Disorders 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 Anemia: 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 Anemia: 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 Anemia
  - 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
- 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. Blood Coagulation Cofactors
  - 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 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

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

- 6.1. Primary and Secondary Hemostasis Assessment 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 Monitoring 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 Bleeding 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. Bleeding 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. Bleeding 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 Bleeding 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 Bleeding Disorders
  - 8.2.1. Indication of Vitamin K in Bleeding 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 Leukemia, Lymphoma 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 Lymphoma
  - 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. Update on Plasma Cell Dyscrasias

- 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

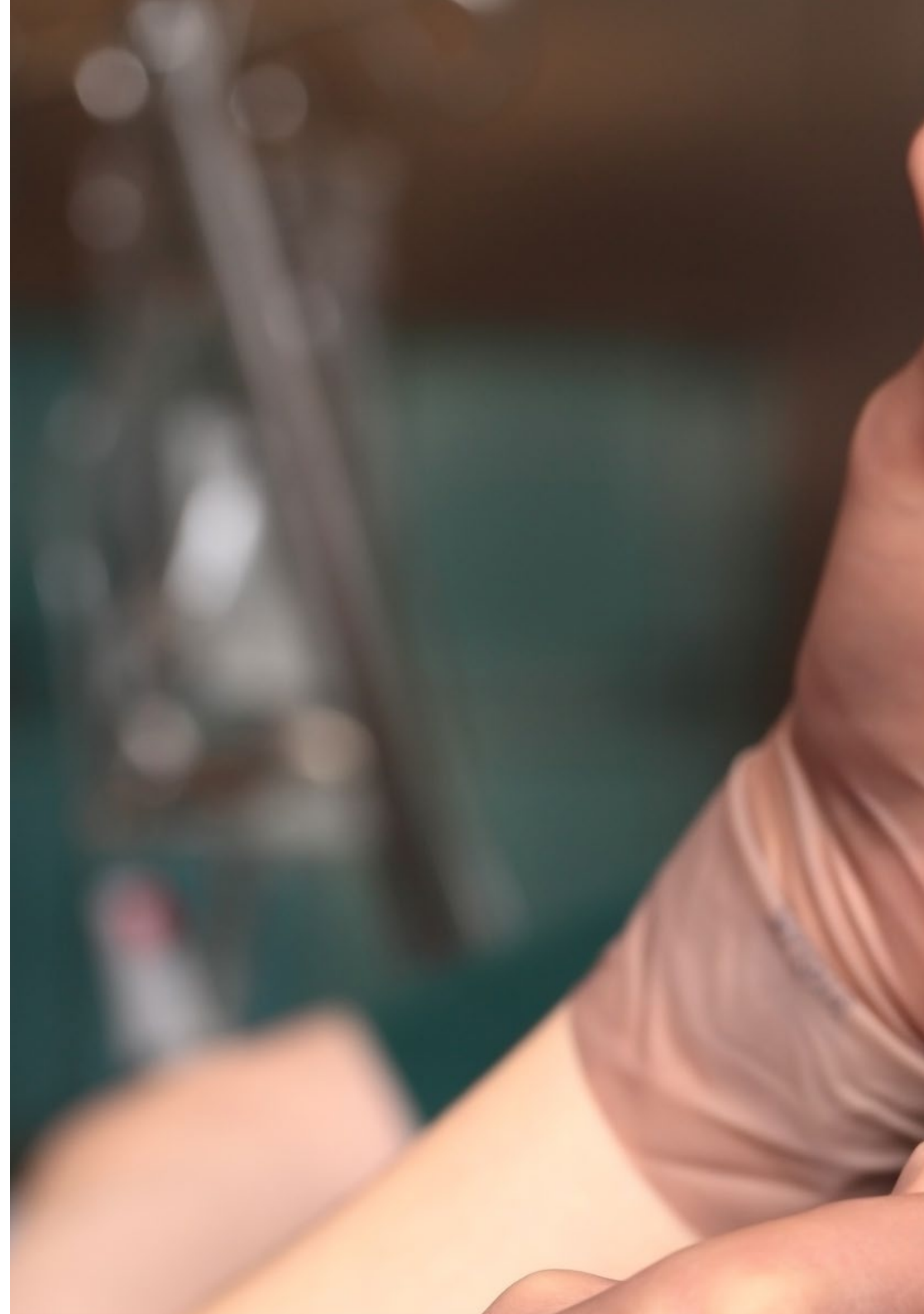
## Module 11. New Developments in the General Treatment of Hematologic Diseases

- 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 Hematology Patients
  - 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

- 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 Therapy for 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 Transfusion of Blood, Blood Components and Blood Derivatives
  - 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



*This program represents the key to advancing your career"*

06

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





“

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

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

*With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.*



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

“

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

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

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



## Relearning Methodology

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

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

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



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

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

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

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

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



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



#### Study Material

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

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



#### Surgical Techniques and Procedures on Video

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



#### Interactive Summaries

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

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

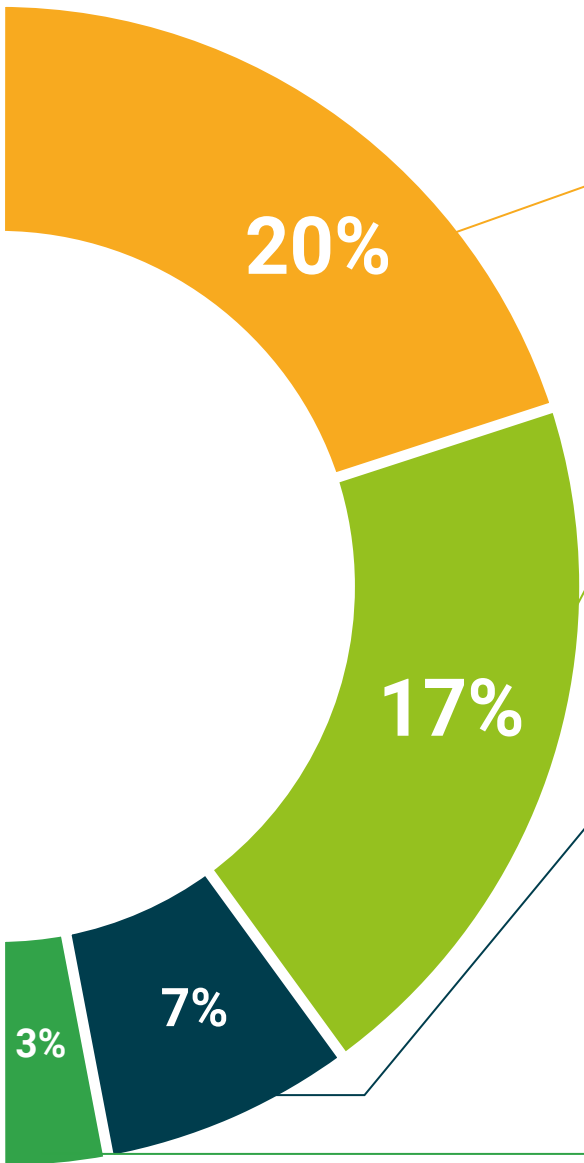


#### Additional Reading

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







#### Expert-Led Case Studies and Case Analysis

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



#### Testing & Retesting

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



#### Classes

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



#### Quick Action Guides

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



07

# Certificate

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





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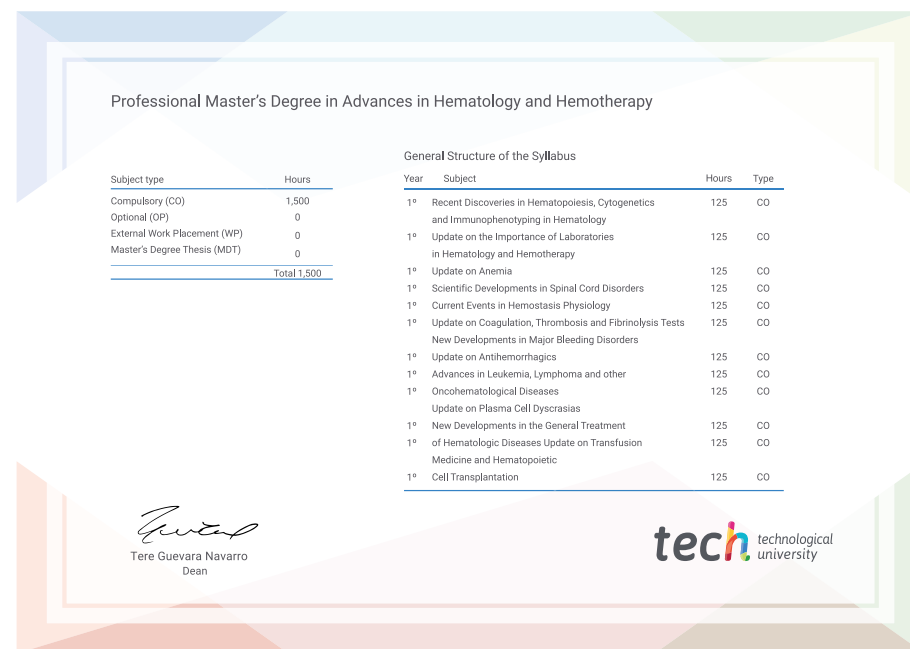
*Successfully complete this program  
and receive your university degree  
without travel or laborious paperwork”*

This **Professional Master's Degree in Advances in Hematology and Hemotherapy** contains the most complete and up-to-date scientific program on the market.

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

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

Title: **Professional Master's Degree in Advances in Hematology and Hemotherapy**  
 Official N° of hours: **1,500 h.**



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

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education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present quality  
development languages  
virtual classroom



**Professional Master's Degree**  
Advances in Hematology  
and Hemotherapy

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Technological University
- » Dedication: 8h/week
- » Schedule: at your own pace
- » Exams: online

# Professional Master's Degree Advances in Hematology and Hemotherapy

