

# Postgraduate Diploma

## Update on Blood Cleansing Techniques in Nephrology





## Postgraduate Diploma

### Update on Blood Cleansing Techniques in Nephrology

- » Modality: Online
- » Duration: 6 months.
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/medicina/experto-universitario/experto-actualizacion-tecnicas-depuracion-sanguinea-nefrologia](http://www.techtitute.com/us/medicina/experto-universitario/experto-actualizacion-tecnicas-depuracion-sanguinea-nefrologia)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 18*

05

Methodology

---

*p. 22*

06

Certificate

---

*p. 30*

# 01

# Introduction

Technological advances and recent scientific research have led to an improved management of blood cleansing. In this sense, advanced techniques have been developed that optimize these processes and contribute to increase the quality of life of the patient with CKD. Therefore, physicians must keep up to date in order to avoid being left behind with respect to the evolution of this sector. In this context, TECH has created this program, which allows the student to learn the advanced protocols to perform plasmapheresis or molecular adsorption. All this, enjoying a 100% online format that offers the specialist the possibility of getting up to date without leaving home.





“

*You will delve into the up to indications and contraindications plasmapheresis thanks to this Postgraduate Diploma that only TECH can offer you”.*

Thanks to incessant scientific evolution, sophisticated hemodialysis systems have been created that provide greater elimination of toxins and better blood cleansing compared to other traditional methods. In addition, extensive research has been carried out to perfect the biocompatibility of the materials used in this procedure, which has led to the introduction of high-performance synthetic membranes that minimize adverse reactions and side effects in patients. Therefore, knowledge of all these advances is essential for the specialist who wishes to position himself at the nephrological forefront.

Based on this, TECH has developed this Postgraduate Diploma, which will allow physicians to update their knowledge regarding the application of blood cleansing therapies. Through 6 months of intensive learning, you will delve into the criteria for the use of plasmapheresis in various clinical situations. It will also explore the use of the Prometheus system or PFAD to undertake the blood cleansing process.

Since this qualification is offered in a 100% online format, physicians will be able to combine their daily tasks with their update, since they will not be subject to a predetermined study schedule. In addition, the program integrates Relearning in its educational methodology, which will allow the specialist to assimilate the knowledge more effectively.

This **Postgraduate Diploma in Update on Blood Cleansing Techniques in Nephrology** contains the most complete and up-to-date scientific program on the market. Its most notable features are:

- ♦ Practical cases presented by specialists in Nephrology and Internal medicine.
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice.
- ♦ Practical exercises where self-assessment can be used to improve learning.
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions 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



*Identify the advantages provided by the PFAD system to perform the blood cleansing process".*



“

*Through this program, you will be up to date regarding the management of infections in renal transplant patients.”*

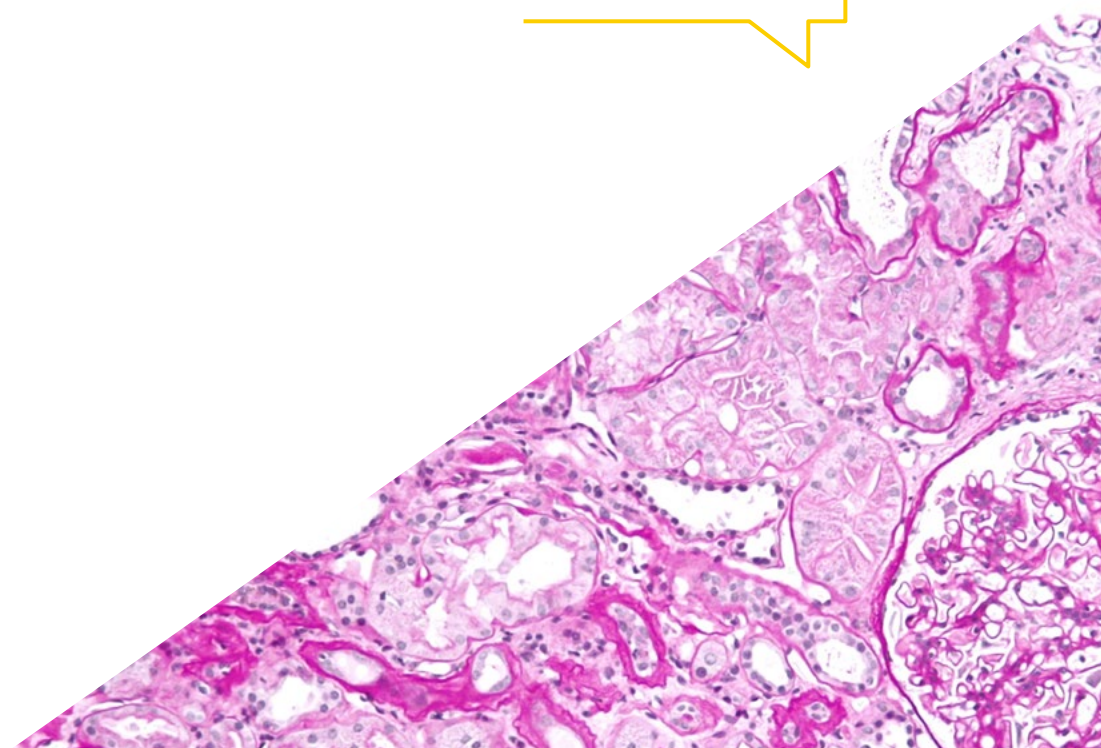
The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

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

*Optimize your knowledge acquisition through a wide variety of multimedia didactic formats.*

*Complete your medical update with the best specialists in Nephrology.*



# 02 Objectives

The aim of this program is to provide the physician with up to date knowledge on the blood cleansing techniques used in Nephrology. In this way, you will be able to position yourself at the forefront of medicine in only 450 hours. In addition, you will enjoy a set of didactic contents that have been designed by the best specialists in the field, guaranteeing the quality of your educational experience.







“

*Study from the place you want and 24 hours a day through the 100% online modality offered by this updating program”.*



## General Objectives

---

- Care for patients with chronic kidney disease and its most frequent complications.
- Care for patients with acute renal failure and its complications, as well as to understand the objective of initiating renal replacement therapy, its indications and management.
- Have an overview of Nephrology as a specialty with its different branches of knowledge and a global approach to the patient.
- Understand and learn the branches that are emerging within the specialty such as diagnostic and interventional nephrology, onconeurology, or cardioneurology.



*You will incorporate the most up-to-date knowledge of molecular adsorption techniques and endotoxin adsorption filters into your medical practice."*





## Specific Objectives

---

### Module 1. Onconephrology and Kidney-Liver

- ♦ Gain an in-depth knowledge of Onconephrology as a subspecialty of Nephrology and its usefulness.
- ♦ Learn to identify those patients at risk of developing renal failure during oncological treatment, as well as its approach and treatment.
- ♦ Learn the close relationship between the kidney and the liver
- ♦ Know in depth the diagnostic criteria of hepatorenal syndrome and its management.

### Module 2. Hydroelectrolytic Alterations and Poisonings

- ♦ Learn the different hydroelectrolytic alterations most frequently consulted in Nephrology.
- ♦ Learn the novelties in the treatment and diagnosis of metabolic acidosis and metabolic alkalosis.
- ♦ Understand the indication for renal replacement therapy in the management of lithium, metformin and glycolic poisoning.
- ♦ Know in depth the diagnosis between distal tubular acidosis and type IV tubular acidosis.

### Module 3. Renal Transplant and Other Blood Purification Techniques

- ♦ Know in depth the indications and contraindications for renal transplantation.
- ♦ Know in depth the immunosuppression guidelines in the renal transplant patient, as well as its complications.
- ♦ Understand the management of infections in the renal transplanted patient, as well as the management of acute rejection
- ♦ Know and expand the study of the different blood purification techniques such as plasmapheresis, adsorption techniques.



# 03

# Course Management

This program has a faculty composed of leading experts in the field of Nephrology. These professionals, active in prestigious hospitals, have solid experience in the management of renal diseases, surgery and dialysis techniques. Therefore, the knowledge acquired by the students will be aligned with the latest technological advances applied to this field.





“

*Get up to date through a syllabus designed and developed by the best specialists in the field of Nephrology”.*



## International Guest Director

With an extensive professional career of over 30 years, Dr. David Mount has become a prestigious Nephrologist highly specialized in the area of Renal Medicine. In this sense, his clinical approach focuses on providing personalized clinical programs according to the individual characteristics of patients with chronic and acute conditions. Thanks to the application of multiple innovative techniques, he has managed to optimize both the quality of life of numerous individuals and their long-term recovery prognosis.

In this same line, he has carried out his functions in health institutions of international reference such as the Brigham and Women's Hospital in Massachusetts. Therefore, he has held strategic roles ranging from Renal Area Management or Management of the Inpatient Dialysis Unit to the Head of Clinical Services. In this way, he has focused on improving the standards of care for users with renal diseases, implementing cutting-edge protocols to maximize therapeutic processes such as hemodialysis and minimize the usual associated risks such as the complication of vascular access.

It has also led the Digital Transformation of various healthcare institutions and implemented solutions such as Artificial Intelligence, Big Data and even Intelligent Systems to monitor the status of individuals in real time. These tools have managed to increase the accuracy in diagnoses and treatments of complex Kidney Diseases. Also, this avant-garde vision has made it possible to reduce hospitalization rates, which has improved the functioning of health systems by promoting a more efficient, accessible and high quality care model.

On the other hand, he has balanced these tasks with his facet as a Clinical Researcher. In fact, he has a vast scientific production in areas such as cutting-edge techniques for Renal Transplants, identification of Biomarkers and strategies for the prevention of Renovascular Hypertension.



## Dr. Mount, David

---

- Clinical Chief of the Renal Division at Brigham and Women's Hospital in Massachusetts, United States
- Director of Dialysis Services at Brigham and Women's Hospital, Massachusetts
- System of Care Physician, VA Boston Healthcare System, Massachusetts
- Vanderbilt University Medical Center, Vanderbilt University Medical Center, Vanderbilt
- Nephrology Internship at Brigham and Women's Hospital, Massachusetts
- Internal Medicine Residency at Toronto General Hospital
- Doctor of Medicine from the University of Toronto
- Bachelor of Science in Biochemistry from the University of Ottawa



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

## Address



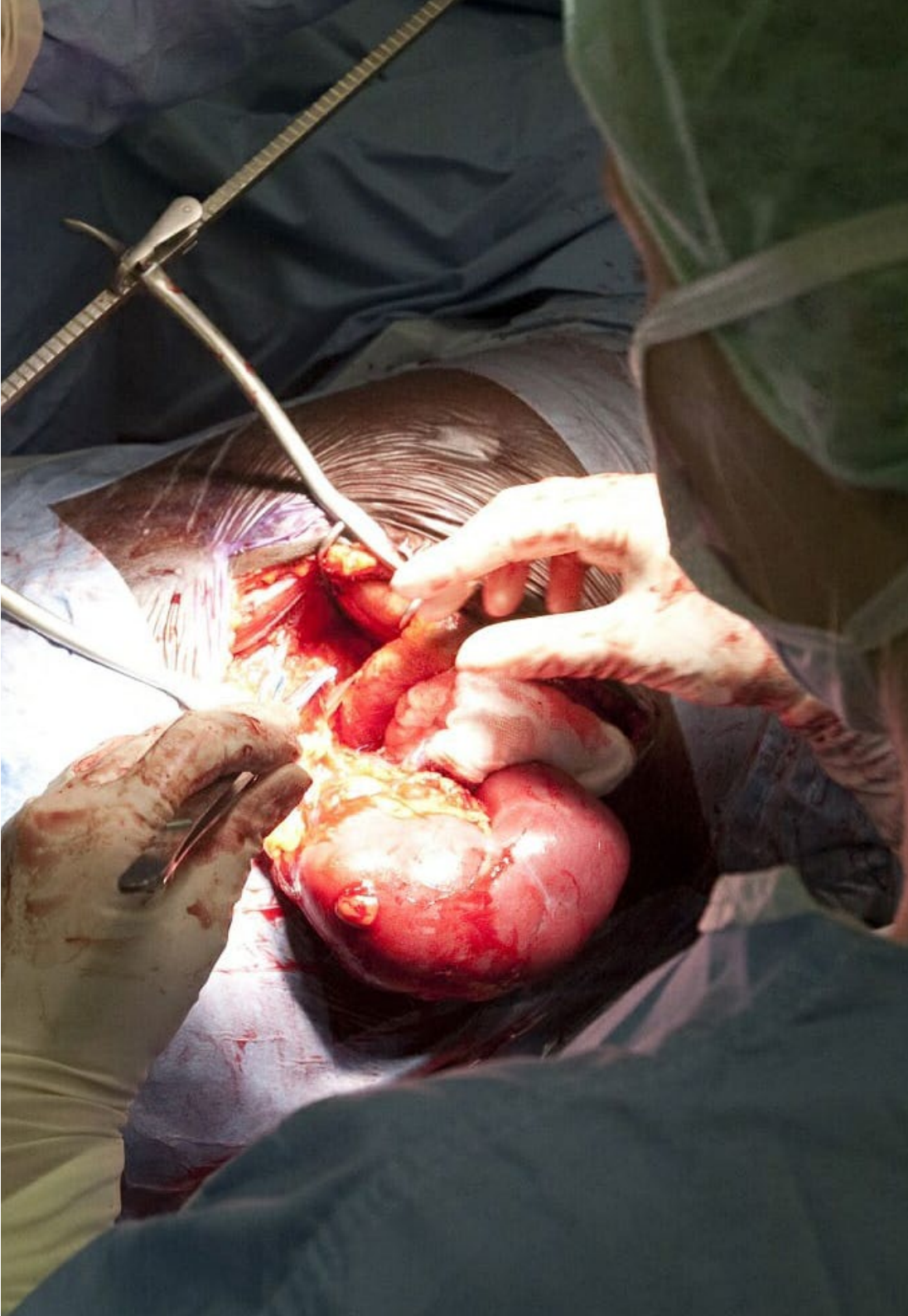
### **Dr. Ribas Closa, Andrés**

- ◆ Nephrologist at the Sant Jordi Clinic in Sant Andreu
- ◆ Nephrology Del Mar Hospital, Barcelona
- ◆ Expert in Clinical Ultrasound at the Francisco de Vitoria University.
- ◆ Master's Degree in Infectious Diseases and Antimicrobial Treatment from the CEU Cardenal Herrera University
- ◆ Degree in Medicine from the Autonomous University of Barcelona.



### **Dr. Angulo, Josep María**

- ◆ Head of Nephrology Service at Fundació Althaia in Manresa
- ◆ Head of Nephrology Service at the Hospital de Palamós
- ◆ Professor of Nephrology at the International University of Catalonia
- ◆ Former President of the Catalan Societies of Nephrology and Arterial Hypertension
- ◆ Specialization in Nephrology by the Hospital de Bellvitge
- ◆ Postgraduate degree in Basic Nephrology from the University of Minnesota.
- ◆ Degree in Medicine and Surgery from the University of Barcelona
- ◆ Member of: Spanish Society of Nephrology and Arterial Hypertension



## Professors

### Dr. Outón, Sara

- ◆ Nephrologist at Consorci Sanitari Alt Penedès-Garraf
- ◆ Pediatric Nephrologist in the University of California
- ◆ Degree in Medicine from the University of Santiago de Compostela.

### Dr. Pascual Sánchez, Sergio

- ◆ Specialized in Nephrology at Consorci Sanitari Alt Penedès-Garraf
- ◆ Psychiatric Monitor at CPB (Serveis Salut Mental)
- ◆ Master's Degree in Neurobiology and Behavior from the Instituto Superior de Estudios Psicológicos (Higher Institute of Psychological Studies)
- ◆ Degree in Medicine from the Autonomous University of Barcelona.
- ◆ Degree in Psychology from the Autonomous University of Barcelona.

### Dr. Galcerán, Isabel

- ◆ Specialist in Nephrology at Del Mar Hospital of Barcelona
- ◆ Bachelor in Medicine and Surgery from the Autonomous University of Barcelona



# 04

## Structure and Content

This Postgraduate Diploma offers a syllabus that encompasses relevant topics in the field of blood cleansing, in order to provide the specialist with a complete update in this area. In order to achieve this with efficiency and comfort, it is presented in a 100% online modality, which gives students the possibility to carry out their daily activities without interruptions, since they will be able to study without being subject to pre-established schedules.







“

*Update yourself at your own pace of study thanks to the revolutionary Relearning system that only TECH offers".*

## Module 1. Onconephrology and Kidney-Liver

- 1.1 Kidney-Cancer Connection
  - 1.1.1. Chronic kidney disease and cancer: risk factors
  - 1.1.2. Renal damage after contrast in the oncologic patient
- 1.2 Acute Renal Failure in the Oncologic Patient
  - 1.2.1. Diagnosis
  - 1.2.2. Indications for renal biopsy
  - 1.2.3. Thrombotic Microangiopathy in the oncologic patient
  - 1.2.4. Tumor Lysis Syndrome
- 1.3 Check-Point inhibitors
  - 1.3.1. Therapeutic arsenal
  - 1.3.2. Targets of action
  - 1.3.3. Acute Renal Failure.
- 1.4 Cancer and Renal Transplantation
  - 1.4.1. Incidence
  - 1.4.2. Diagnosis
  - 1.4.3. Treatment
- 1.5 Liver-Kidney Interaction
  - 1.5.1. Pathophysiology of the hepatorenal syndrome
- 1.6 Management of Hepatorenal Syndrome
  - 1.6.1. Diagnostic Criteria
  - 1.6.2. Prophylaxis and general measures
  - 1.6.3. Vasoconstrictors and albumin
- 1.7 Renal Dysfunction After Liver Transplantation
  - 1.7.1. Acute renal injury after liver transplantation
  - 1.7.2. Effects of immunosuppression
- 1.8 Extracorporeal Liver Support Devices
  - 1.8.1. MARS Systems
  - 1.8.2. Hemofiltration and Hemodiafiltration
  - 1.8.3. Single-pass dialysis

- 1.9 Chronic Kidney Disease and Cirrhosis
  - 1.9.1. Hepatitis virus infection in chronic kidney disease
  - 1.9.2. NASH and metabolic syndrome
  - 1.9.3. Indications for double Liver and Kidney transplantation
- 1.10 Glomerulopathies and Cirrhosis
  - 1.10.1. Secondary IgA glomerulopathy
  - 1.10.2. Other glomerulopathies in the cirrhotic patient

## Module 2. Hydroelectrolytic Alterations and Poisonings

- 2.1 Metformin poisoning
  - 2.1.1. Pathophysiology
  - 2.1.2. Risk Factors and Classification
  - 2.1.3. Treatment
- 2.2 Ethylene glycol poisoning
  - 2.2.1. Diagnosis
  - 2.2.2. Treatment
- 2.3 Lithium Poisoning
  - 2.3.1. Diagnosis and Clinic
  - 2.3.2. Treatment Indications
  - 2.3.3. Renal replacement treatment indications
- 2.4 Lactic Acidosis
  - 2.4.1. Generation of lactic acid
  - 2.4.2. Differential Diagnosis of Lactic Acidosis
  - 2.4.3. Indication of treatment with bicarbonate
- 2.5 Renal Tubular Acidosis
  - 2.5.1. Renal Tubular Distal Acidosis
  - 2.5.2. Renal Tubular Acidosis Type IV
- 2.6 GAP Anion
  - 2.6.1. Gap anion calculation
  - 2.6.2. Anion GAP and clinical utility
  - 2.6.3. Urinary GAP anion

- 2.7 Hyperkalemia
    - 2.7.1. Acute hyperkalemia, causes and diagnosis
    - 2.7.2. Treatment of Acute Hyperkalemia
    - 2.7.3. Renal replacement therapy in acute hyperkalemia
  - 2.8 Hyponatremia
    - 2.8.1. Estimation of extracellular volume in hyponatremia
    - 2.8.2. Treatment algorithms in hyponatremia
    - 2.8.3. Usefulness of urinary study
  - 2.9 Metabolic Alkalosis
    - 2.9.1. Differential Diagnosis
    - 2.9.2. Treatment of metabolic alkalosis
    - 2.9.3. Role of dialysis in metabolic alkalosis
  - 2.10 Magnesium disorders
    - 2.10.1. Hypomagnesemia
    - 2.10.2. Hypomagnesemia
- 3.5 Acute Rejection in Renal Transplant Patients
    - 3.5.1. Indications for renal biopsy
    - 3.5.2. New Treatments
  - 3.6 Plasmapheresis Non Renal Indications
    - 3.6.1. Plasmapheresis in hematologic diseases
    - 3.6.2. Plasmapheresis in Septic Shock
    - 3.6.3. Plasmapheresis in systemic autoimmune diseases
  - 3.7 Molecular Adsorption Techniques
    - 3.7.1. Endotoxin adsorption filters
    - 3.7.2. Utility and clinical evidence
  - 3.8 Extracorporeal oxygenation membranes
    - 3.8.1. Membranes for lung support
    - 3.8.2. Membranes for Cardiac support
  - 3.9 Prometheus System
    - 3.9.1. Prometheus system utility. EC HELIOS
    - 3.9.2. Comparison between Prometheus and MARS System.
  - 3.10 PFAD System (Plasma Filtration-Adsorption-Dialysis)
    - 3.10.1. New Perspectives.
    - 3.10.2. Potential usefulness in the clinic

### Module 3. Renal Transplant and Other Blood Purification Techniques

- 3.1 Indications for Renal Transplantation
  - 3.1.1. Indication and contraindications of renal transplantation
  - 3.1.2. Pre-renal transplant immunological study
- 3.2 Immunosuppression in Renal Transplantation
  - 3.2.1. Immunosuppression regimens in renal transplantation
  - 3.2.2. Induction regimens in renal transplantation
  - 3.2.3. Complications related to immunosuppression
  - 3.2.4. Imlyfidase
- 3.3 Complications of Renal Post-transplantation
  - 3.3.1. Surgical complications
  - 3.3.2. Cardiovascular Complications
- 3.4 Infection in the Renal Transplant Patient
  - 3.4.1. Infections in the immediate post-transplant period
  - 3.4.2. Infections in the Renal Transplant Patient
  - 3.4.3. Opportunistic infections: CMV, BKCMV



*Obtain the most up-to-date knowledge on blood cleansing techniques in Nephrology by enrolling in this program."*

# 05 Methodology

This 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 sustainable 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 assess 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

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

*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 prepared with unprecedented success in all clinical specialties regardless of surgical load. Our educational 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 adapted in 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 assess and re-assess students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



**Classes**

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



**Quick Action Guides**

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



# 06 Certificate

The Postgraduate Diploma in Update on Blood Cleansing Techniques in Nephrology guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.





“

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

This program will allow you to obtain your **Postgraduate Diploma in Update on Blood Cleansing Techniques in Nephrology** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

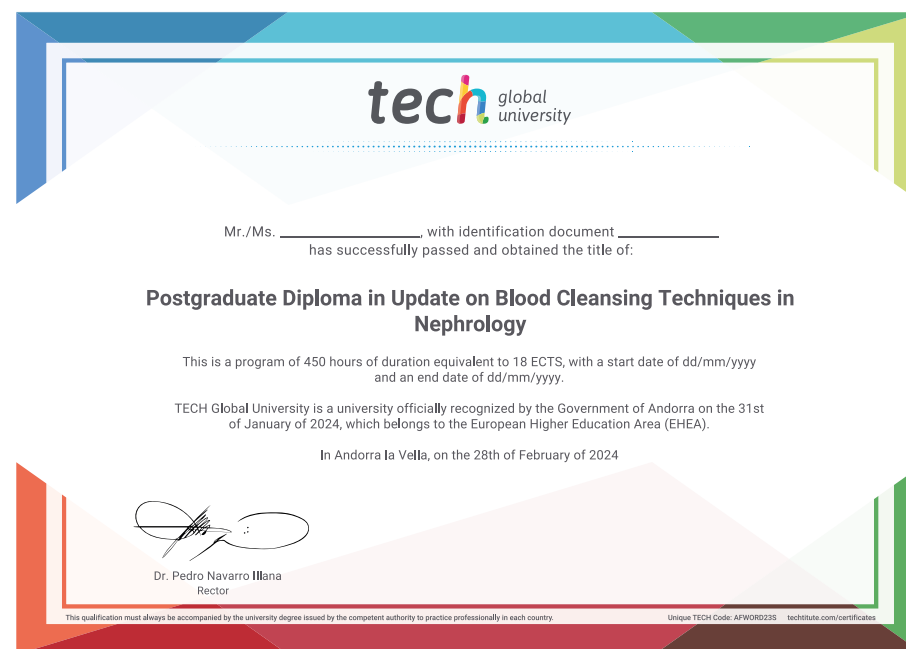
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Update on Blood Cleansing Techniques in Nephrology**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**







## Postgraduate Diploma

Update on Blood  
Cleansing Techniques in  
Nephrology

- › Modality: online
- › Duration: 6 months
- › Certificate: TECH Global University
- › Credits: 18 ECTS
- › Schedule: at your own pace
- › Exams: online

# Postgraduate Diploma

## Update on Blood Cleansing Techniques in Nephrology

