

# Postgraduate Certificate

## Hydroelectrolytic Alterations and Poisonings



## Postgraduate Certificate Hydroelectrolytic Alterations and Poisonings

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/medicine/postgraduate-certificate/hydroelectrolytic-alterations-poisonings](http://www.techtute.com/us/medicine/postgraduate-certificate/hydroelectrolytic-alterations-poisonings)

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# 01

# Introduction

Toxic substances that come into contact with the individual, whether by ingestion, inhalation or skin contact, can affect the electrolyte balance and cause metabolic disorders in the body, resulting in significant kidney damage. It is therefore essential for physicians to know the latest procedures for dealing with these situations, in order to ensure the well-being of patients and to optimize their professional update. For this reason, this program has been created, which allows to delve into the latest methods of diagnosis and treatment of hydroelectrolytic disorders and poisonings. Moreover, this update will be carried out 100% online and without having to travel to a study center.





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*With TECH, you will delve into the management of Metformin poisoning, exploring the most up to date treatments for it"*

Hydroelectrolyte disturbances and poisonings are medical conditions that represent a relevant challenge in Nephrology. In this line, they can cause important damages that impair the renal functions of individuals. As a consequence, in recent years scientific research has focused on finding significant advances in the management of this type of poisoning, which has allowed the development of more effective and specific therapies. For this reason, it is essential to keep up to date in this field in order to provide advanced medical care and improve outcomes in patients affected by various toxic substances.

For this reason, TECH has created this Postgraduate Certificate, through which the student will delve into the latest advances regarding the management of Hydroelectrolyte Disorders and Poisonings. Throughout this educational period, students will delve into the latest methods of diagnosis of ethylene glycol poisoning, as well as the treatment of poisoning caused by Metformin. In addition, they will detect the up to date indications for renal replacement therapy of lithium poisoning.

Since this program is available in a 100% online format, students will have the possibility to adapt their update to their schedule and daily responsibilities without time restrictions. Furthermore, the educational approach of the program is based on the *Relearning* methodology, which guarantees a solid and lasting understanding of the fundamental concepts for physicians.

This **Postgraduate Certificate in Hydroelectrolytic Alterations and Poisonings** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ 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



*Delve into the most effective and advanced treatments for ethylene glycol poisoning"*

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*Study through real case simulations and videos and optimize your update process”*

*Update yourself through a 100% online modality that will allow you to study without leaving your home.*

*Learn about the diagnosis and the most advanced treatment of lithium poisoning.*

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.



# 02

# Objectives

The main objective of this program is to provide physicians with the most innovative knowledge in the field of poisoning and other water-electrolyte disorders. In this way, they will be able to provide advanced medical care to diagnose and treat these disorders, prevent complications and improve outcomes for affected patients.







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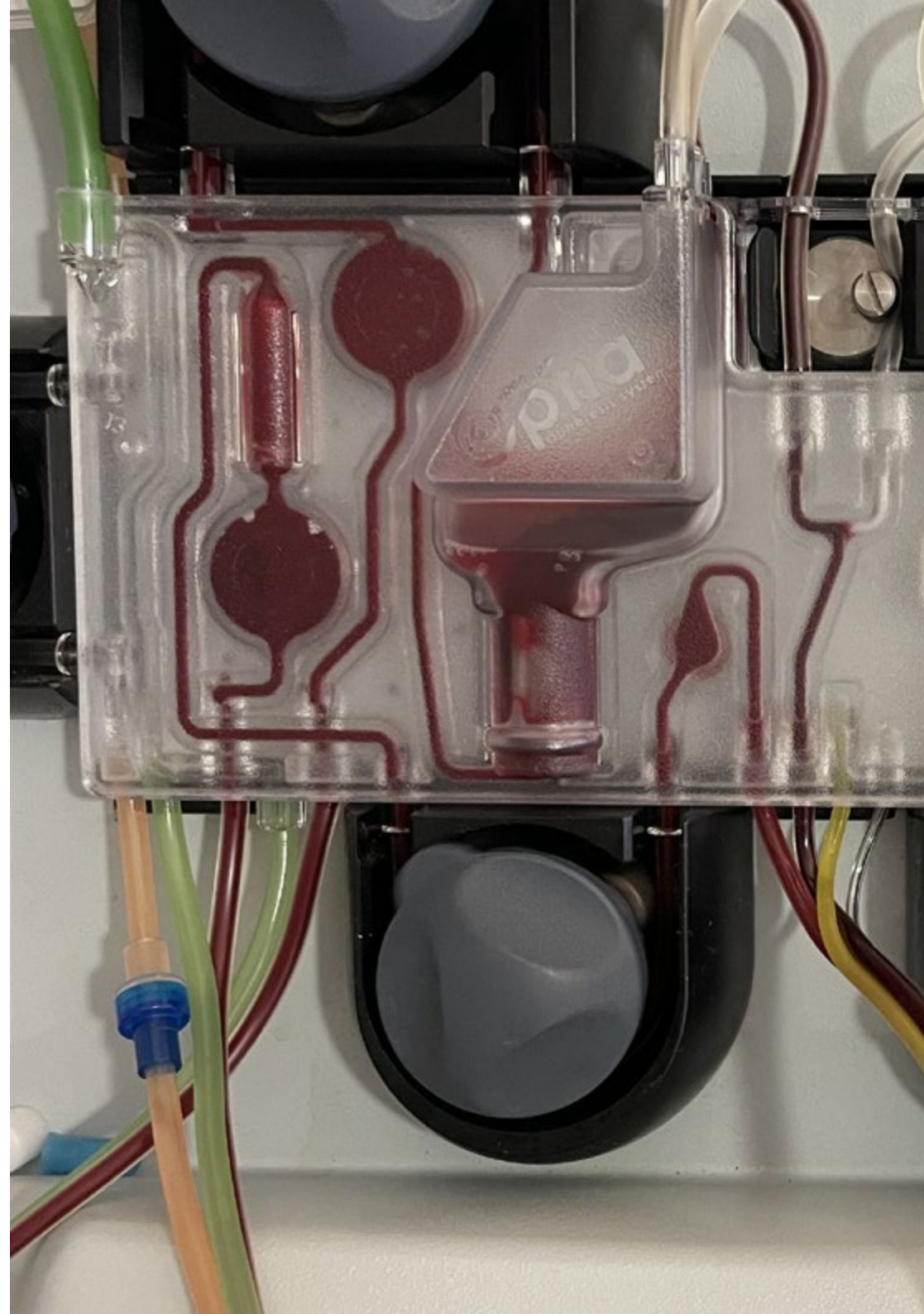
*TECH will offer you the best didactic tools so that, through 6 weeks of intensive learning, you will be at the forefront in the management of poisonings"*

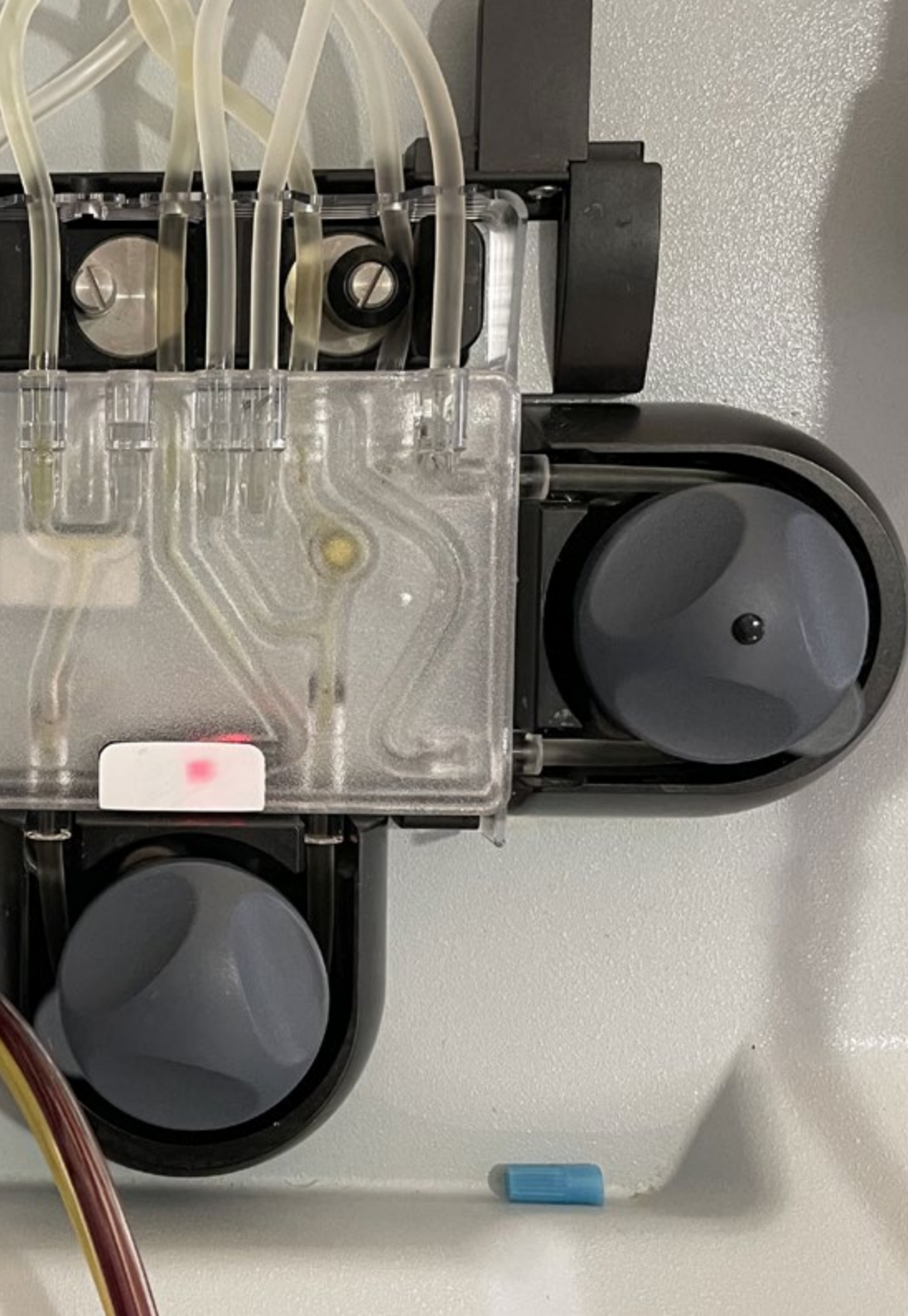


## General Objectives

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- 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





## Specific Objectives

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- ◆ 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



*Diagnose with agility and apply the most advanced treatments for Hyperkalemia thanks to this postgraduate certificate"*

03

# Course Management

In order to maintain the excellent quality that distinguishes TECH qualifications, this program has a teaching team composed of leading experts in the field of Nephrology. These professionals have extensive experience in the treatment of renal diseases, surgery and dialysis. Consequently, the specialist will obtain up-to-date knowledge in line with the latest advances in this discipline.





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

## Management



### 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. Galcerán, Isabel

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



*Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"*

# 04

## Structure and Content

This Postgraduate Certificate offers a syllabus that covers relevant topics in the field of Hydroelectrolyte Disorders and Poisonings. In this sense, it will present up to date contents that delve into ethylene glycol poisoning, hyperkalemia and magnesium disorders. In addition, its 100% online methodology will offer physicians the opportunity to access the best study resources from anywhere they wish, guaranteeing a pleasant, decisive and individualized teaching.





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*A syllabus tailored to your needs and designed under the most effective pedagogical methodology: Relearning”*

## Module 1. Hydroelectrolytic alterations and poisonings

- 1.1. Metformin poisoning
  - 1.1.1. Pathophysiology
  - 1.1.2. Risk Factors and Classification
  - 1.1.3. Treatment
- 1.2. Ethylene glycol poisoning
  - 1.2.1. Diagnosis
  - 1.2.2. Treatment
- 1.3. Lithium Poisoning
  - 1.3.1. Diagnosis and Clinic
  - 1.3.2. Treatment Indications
  - 1.3.3. Renal replacement treatment indications
- 1.4. Lactic Acidosis
  - 1.4.1. Generation of lactic acid
  - 1.4.2. Differential Diagnosis of Lactic Acidosis
  - 1.4.3. Indication of treatment with bicarbonate
- 1.5. Renal Tubular Acidosis
  - 1.5.1. Renal Tubular Distal Acidosis
  - 1.5.2. Renal Tubular Acidosis Type IV
- 1.6. GAP Anion
  - 1.6.1. Gap anion calculation
  - 1.6.2. Anion GAP and clinical utility
  - 1.6.3. Urinary GAP anion
- 1.7. Hyperkalemia
  - 1.7.1. Acute hyperkalemia, causes and diagnosis
  - 1.7.2. Treatment of Acute Hyperkalemia
  - 1.7.3. Renal replacement therapy in acute hyperkalemia
- 1.8. Hyponatremia
  - 1.8.1. Estimation of extracellular volume in hyponatremia
  - 1.8.2. Treatment algorithms in hyponatremia
  - 1.8.3. Usefulness of urinary study





- 1.9. Metabolic Alkalosis
  - 1.9.1. Differential Diagnosis
  - 1.9.2. Treatment of metabolic alkalosis
  - 1.9.3. Role of dialysis in metabolic alkalosis
- 1.10. Magnesium disorders
  - 1.10.1. Hypomagnesemia
  - 1.10.2. Hypomagnesemia

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*Welcome to the training that will take your career to the next level. Don't let this opportunity slip away"*

05

# Methodology

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

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





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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. 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.

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*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

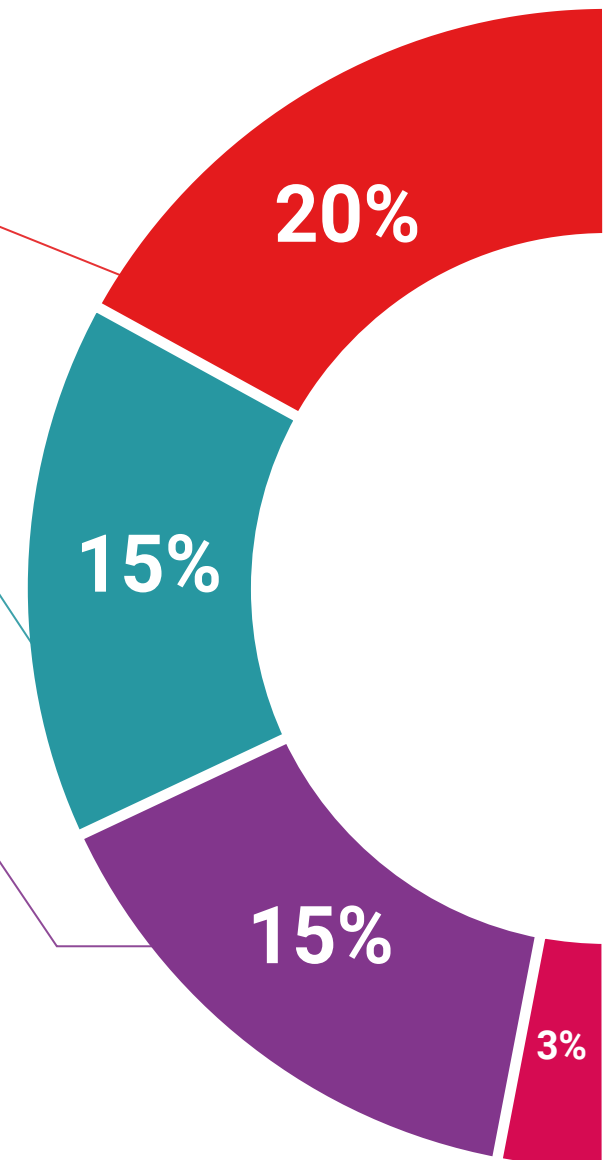
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.



# 06 Certificate

The Postgraduate Certificate in Hydroelectrolytic Alterations and Poisonings guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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*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 Certificate in Hydroelectrolytic Alterations and Poisonings** 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 Certificate in Hydroelectrolytic Alterations and Poisonings**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



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

future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

**tech** global  
university

personalized service innovation

knowledge present  
and Poisonings

online training

development languages

virtual classroom

## Postgraduate Certificate Hydroelectrolytic Alterations and Poisonings

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

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