

# Postgraduate Certificate

## Hospital Pharmacology of the Nervous System



## Postgraduate Certificate Hospital Pharmacology of the Nervous System

- » Modality: online
- » Duration: 12 weeks
- » Certificate: TECH Global University
- » Credits: 12 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/pharmacy/postgraduate-certificate/hospital-pharmacology-nervous-system](http://www.techtute.com/us/pharmacy/postgraduate-certificate/hospital-pharmacology-nervous-system)

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# 01

# Introduction

The pharmacological management of diseases associated with the nervous system has allowed many people to improve their quality of life, providing normality and positively influencing their daily lives. However, the neurological area is one of the most complex within medicine, so that neuropharmacology often fails to discern which treatment is the most appropriate to treat, for example, a psychiatric pathology such as schizophrenia. Thus, through a detailed analysis of this context in the current hospital area, TECH has designed a program that includes the latest advances in this regard, information that has compacted in 360 hours of the best content 100% online so that the specialist can get up to date in just 6 weeks.





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*TECH presents this Postgraduate Certificate as an unparalleled opportunity to get up to date on the latest developments in Hospital Pharmacology of the Nervous System in a 100% online way”*

The study of the nervous system and its in-depth knowledge has been one of the most complex obstacles that science, and more specifically medicine, has had to face. To this day, the epidemiology of many pathologies that affect human beings is still unknown, which hinders the work not only of health professionals, but also of the professionals who collaborate in their work by providing alternatives for their treatment, such as drugs. However, in recent years considerable progress has been made in the knowledge of the already established psychiatric and neurological diseases such as Epilepsy, Migraine, different types of stroke or cerebral edema, among others, which has allowed the design of formulas that help patients suffering from them to significantly improve their quality of life.

With all this, TECH has designed a complete program focused on Hospital Pharmacology of the Nervous System. This is a program oriented to serve as a guide for graduates who need to get up to date in this field. Thus, through 360 hours of the best theoretical, practical and additional content, the specialist will be able to delve into the latest developments associated with the different diseases, in addition to analyzing the latest recommendations based on the clinical criteria of the patient and whether they are adults or children.

During the 6 weeks of the program, the specialist will have access to a 100% online Virtual Campus, where the entire syllabus will be hosted from the beginning of the academic experience. In addition, all the content can be downloaded for consultation when you do not have coverage or when you have completed your relationship with this university. Thus, TECH guarantees that you will be able to organize the teaching calendar according to your own availability, eliminating the obstacles that make it difficult to combine the course of this program with the hospital activity.

This **Postgraduate Certificate in Hospital Pharmacology of the Nervous System** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ◆ The development of practical cases presented by experts in Pharmacy, Hospital Management, among others
- ◆ 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



*You will be able to work with the latest advances in treatments for Epilepsy, Migraine and Myasthenia Gravis through 360 hours of the best theoretical, practical and additional content"*

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*A university qualification that you can access from the mobile device of your choice, anytime, anywhere, or by downloading its materials to consult them offline”*

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

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

The design of this program focuses on Problem-Based Learning, by means of which the professionals must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the students will be assisted by an innovative interactive video system created by renowned experts.

*The program includes different sections for the application of drugs depending on the age of the patient, so you can get up to date on the characteristics of each one.*

*You will work with the latest neuropharmacological recommendations with multiple resources to fix the knowledge in a dynamic and effective way.*



# 02 Objectives

The approach of this Postgraduate Certificate in Hospital Pharmacology of the Nervous System has been developed taking as a reference the latest known advances in this field. Therefore, its objective is to serve as a guide to any graduate who needs it and who seeks to achieve professional excellence through a program that allows them to improve their competencies. For this purpose, you will have 360 hours of the best theoretical, practical and additional content designed by the best experts in the sector.







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*You will be up to date in the management of the agitated patient through the improvement of clinical presentation skills, initial management and first and second line therapies"*



## General Objectives

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- ◆ Update knowledge on acute pain management in the substance abuse patient: general principles, multimodal analgesia
- ◆ Deepen in alcohol withdrawal syndrome: incidence, pathophysiology, signs and symptoms, severity of withdrawal, pharmacology and supportive therapies
- ◆ Delve into the definition and diagnosis, initial management, patient education around hypertensive emergency

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*TECH has launched this program meeting the most demanding standards of the highest level of academic offerings in today's university context”*





## Specific Objectives

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- ◆ Delve into seizures in the adult patient: definitions, clinical presentation, antiepileptic drugs
- ◆ Deepen in seizures in the pediatric patient: definition, diagnosis, pharmacological management
- ◆ Update knowledge about Status Epilepticus (SE) in the adult patient
- ◆ Define SE in the pediatric patient, causes, diagnosis and treatment
- ◆ Management of myasthenia gravis (MG): definition, initial management, indications for intubation, drugs to avoid
- ◆ Inquire into Headache and Migraine in the adult patient, as well as incidence, types of Headache, diagnosis, first and second line treatments, pharmacological alternatives
- ◆ Be aware of the pharmacology in pediatric patients with Headache and Migraine
- ◆ Explore the initial evaluation, imaging tests, multidisciplinary team, time-dependent pharmacology, endovascular therapy, antithrombotic treatment of ischemic stroke
- ◆ Delve into the management of hypertension in acute ischemic stroke: treatment selection, goals, objectives
- ◆ Describe the incidence, clinical presentation, mechanism and risk factors, management of oropharyngeal angioedema due to Alteplase
- ◆ Delve into the incidence, definition and clinical presentation, risk factors, initial management of hemorrhagic stroke - intracerebral hemorrhage (ICH)
- ◆ Be updated on diagnosis, initial emergency management, pharmacological and non-pharmacological measures in cerebral edema
- ◆ Delving into opioid overdose

# 03

# Course Management

The faculty of this Postgraduate Certificate has been designed by TECH based on the impeccable curricula it has received and selecting a team of professionals of the highest level. Thanks to this, the graduates who access this academic experience will have the support of distinguished specialists in the area of Hospital Pharmacology of the Nervous System. In addition, they have actively participated in the design of the content, not only by selecting the information of the syllabus, but also by providing multiple multimedia resources.





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*The experience of the teaching staff, as well as their current activity in the hospital area, will allow you to obtain a versatile and critical vision of the Pharmacology of the Nervous System in this context"*

## Management



### Mr. Ramo Rodríguez, Javier

- ♦ Pharmacist at Hospital Corporación Sanitaria Parc Taulí, Sabadell, Spain
- ♦ Coordinating member of the working group of pharmacists specializing in the Emergency Department (RedFaster)
- ♦ Pharmacist specializing in Hospital Pharmacy at Hospital Mútua de Terrassa
- ♦ Pharmacist specializing in Hospital Pharmacy at Consorci Sanitari Integral
- ♦ Resident Pharmacist at Servicio Canario de la Salud (Canary Health Service)
- ♦ Assistant Pharmacist in Pharmacy María Concepción Gutiérrez
- ♦ Assistant Pharmacist in Pharmacy Marina López González
- ♦ Master in Pharmacotherapeutic Follow-up of HIV/AIDS patients by the University of Granada



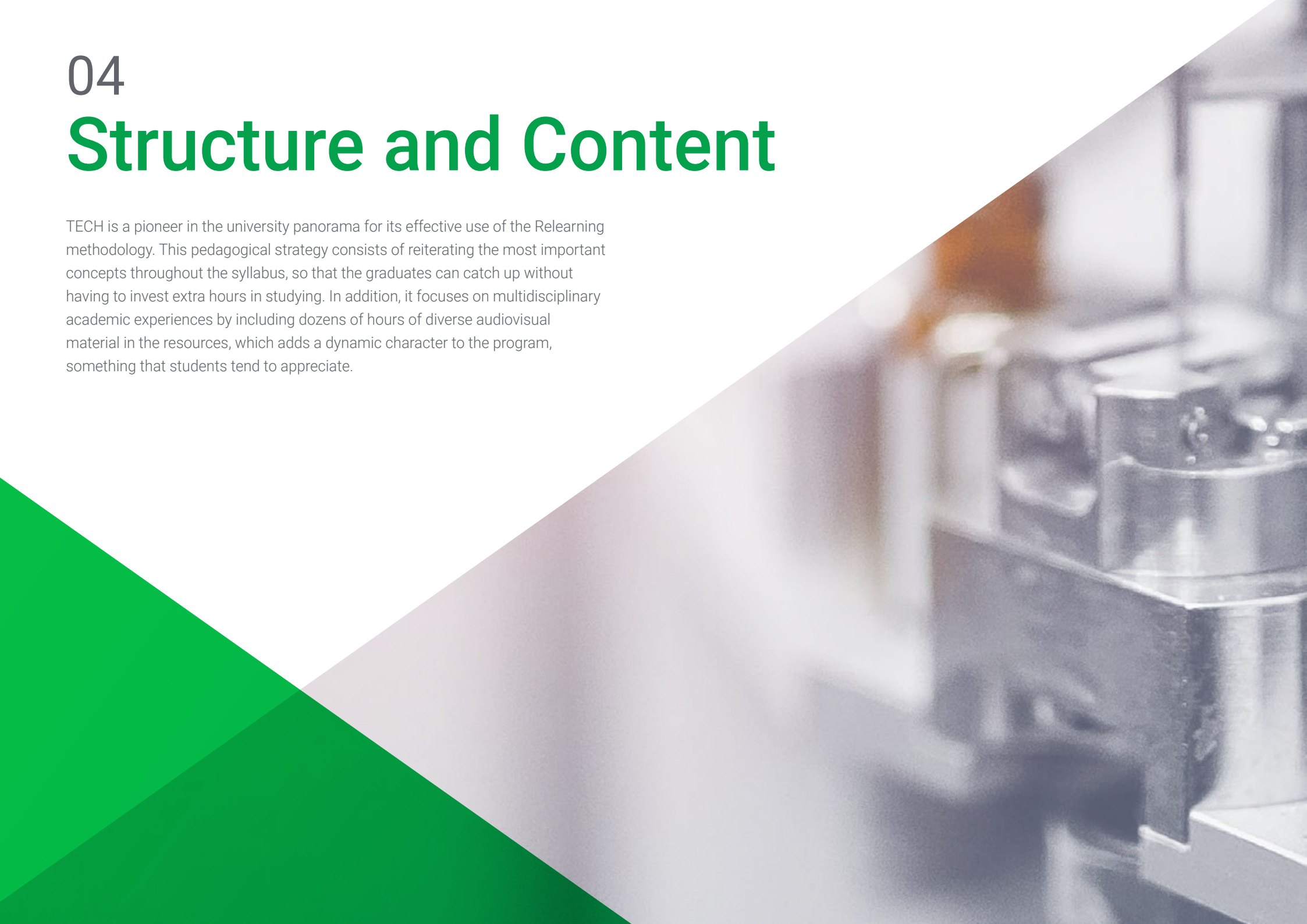
Do not take more than 2 capsules in 24 hours, unless directed by a doctor.  
● Adults: take 2 capsules with a glass of water.  
● If symptoms persist or worsen, ask your doctor.  
● Do not take more than 2 capsules in 24 hours, unless directed by a doctor.  
● Under 18 years of age: ask a doctor.  
Other information:  
● Store at 20°-25°C (68°-77°F).  
● Read all product information carefully.

10 ml  
30 ml

04

# Structure and Content

TECH is a pioneer in the university panorama for its effective use of the Relearning methodology. This pedagogical strategy consists of reiterating the most important concepts throughout the syllabus, so that the graduates can catch up without having to invest extra hours in studying. In addition, it focuses on multidisciplinary academic experiences by including dozens of hours of diverse audiovisual material in the resources, which adds a dynamic character to the program, something that students tend to appreciate.







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*All the content of this program can be downloaded to any device with an Internet connection for consultation, even after the academic experience has been completed”*

## Module 1. Pharmacology of Epilepsy, Migraine and Myasthenia Gravis

- 1.1. Adult Patient Seizures
  - 1.1.1. Classification of Seizures
  - 1.1.2. Differential diagnosis and clinical evaluation
  - 1.1.3. Neuroimaging Studies in Diagnosis
  - 1.1.4. Pharmacological treatment of seizures in the adult patient
- 1.2. Seizures in the pediatric patient
  - 1.2.1. Classification of seizures in the pediatric patient
  - 1.2.2. Differential diagnosis and clinical evaluation of seizures in the pediatric patient
  - 1.2.3. Neuroimaging studies in the diagnosis of seizures in the pediatric patient
  - 1.2.4. Febrile seizures in childhood
- 1.3. Status Epilepticus (SE) in the adult patient
  - 1.3.1. Diagnosis and clinical evaluation of Status Epilepticus
  - 1.3.2. Neurophysiological evaluation and neuroimaging in Status Epilepticus
  - 1.3.3. Causes and triggers of Status Epilepticus in adults
  - 1.3.4. Emergency management and treatment of Status Epilepticus in the adult patient
- 1.4. SE in the pediatric patient
  - 1.4.1. Diagnosis and clinical evaluation of Status Epilepticus in the pediatric patient
  - 1.4.2. Neurophysiological assessment and neuroimaging in pediatric Status Epilepticus
  - 1.4.3. Causes and triggers of Status Epilepticus in children
  - 1.4.4. Emergency management and treatment of Status Epilepticus in the pediatric patient
- 1.5. Management of Myasthenia Gravis (MG)
  - 1.5.1. Classification of Myasthenia Gravis
  - 1.5.2. Pharmacological Treatment of Myasthenia Gravis
  - 1.5.3. Management of myasthenic crisis and acute exacerbations of myasthenia gravis
  - 1.5.4. Immunomodulatory and biological therapies in myasthenia gravis
- 1.6. Headache and Migraine in the adult patient
  - 1.6.1. Classification of primary and secondary headaches
  - 1.6.2. Clinical evaluation and differential diagnosis of headache and Migraine in the adult patient
  - 1.6.3. Initial therapeutic approach and management of episodic migraine
  - 1.6.4. Migraine prophylaxis and prevention of chronic migraine headaches

- 1.7. Headache and Migraine in the pediatric patient
  - 1.7.1. Classification of primary and secondary headaches in children
  - 1.7.2. Clinical evaluation and differential diagnosis of headache and Migraine in the pediatric patient
  - 1.7.3. Differences in the presentation and manifestation of Migraine in children and adults
  - 1.7.4. Acute pharmacological treatment of migraine attacks in children
- 1.8. Hypertensive Emergencies
  - 1.8.1. Classification and categories of hypertensive emergency
  - 1.8.2. Clinical Evaluation and Diagnosis of Hypertensive Emergencies
  - 1.8.3. Complementary tests and laboratory studies for the evaluation of hypertensive emergency
  - 1.8.4. Differentiation between hypertensive emergency and hypertensive urgency
- 1.9. Principles of pharmacokinetics and pharmacodynamics applied to Epilepsy drugs
  - 1.9.1. Pharmacokinetics of antiepileptic drugs
  - 1.9.2. Pharmacological interactions of antiepileptic drugs
  - 1.9.3. Combination treatment strategies
  - 1.9.4. Use of antiepileptic drugs in special populations
- 1.10. Emerging and developing therapies for Migraine treatment
  - 1.10.1. Therapies specifically targeting the pathophysiology of Migraine
  - 1.10.2. Monoclonal therapies directed against calcitonin gene-related peptide (CGRP) in Migraine
  - 1.10.3. PDE4 inhibitors as an emerging treatment for Migraine
  - 1.10.4. Use of monoclonal antibodies in the prophylactic treatment of Migraine

## Module 2. Pharmacology of the Central Nervous System

- 2.1. Ischemic Strokes
  - 2.1.1. Advances in the early diagnosis of ischemic stroke
  - 2.1.2. Evaluation and classification of the risk of ischemic stroke in asymptomatic patients
  - 2.1.3. Thrombolytic treatment strategies in the acute phase of ischemic stroke
  - 2.1.4. Biomarkers in Ischemic Stroke

- 2.2. Management of hypertension in acute ischemic stroke
  - 2.2.1. Current guidelines and protocols for the management of hypertension in acute ischemic stroke
  - 2.2.2. Pharmacologic treatment of hypertension in the acute phase of ischemic stroke
  - 2.2.3. Blood pressure control strategies in ischemic stroke with thrombolytic therapy
  - 2.2.4. Endovascular therapy and blood pressure control in acute ischemic stroke
- 2.3. Oropharyngeal angioedema due to Alteplase
  - 2.3.1. Risk factors for the development of oropharyngeal angioedema after Alteplase administration
  - 2.3.2. Clinical and differential diagnosis of oropharyngeal angioedema in patients treated with Ateplase
  - 2.3.3. Management and treatment of acute oropharyngeal angioedema by Alteplase
  - 2.3.4. Evaluation and follow-up of patients with a history of oropharyngeal angioedema prior to administration of Alteplase
- 2.4. Hemorrhagic stroke: intracerebral hemorrhage (ICH)
  - 2.4.1. Diagnosis and classification of intracerebral hemorrhage in hemorrhagic stroke
  - 2.4.2. Medical and pharmacological treatment of acute intracerebral hemorrhage
  - 2.4.3. Neurosurgical and endovascular management of intracerebral hemorrhage
  - 2.4.4. Multidisciplinary approach in the care of the patient with intracerebral hemorrhage
- 2.5. Cerebral edema
  - 2.5.1. Cytotoxic versus vasogenic cerebral edema
  - 2.5.2. Clinical evaluation and imaging of cerebral edema
  - 2.5.3. Pharmacological strategies for the reduction of cerebral edema in specific pathologies
  - 2.5.4. Effect of cerebral edema
- 2.6. Opioid overdose
  - 2.6.1. Pharmacokinetics and pharmacodynamics of opioids involved in overdose
  - 2.6.2. Role of the hospital pharmacist in opioid overdose prevention and education
  - 2.6.3. Management of opioid withdrawal in the hospital setting
  - 2.6.4. Naloxone and its use as an antidote in opioid overdose reversal
- 2.7. Opioid Withdrawal Syndrome
  - 2.7.1. Epidemiology and risk factors for the development of Opioid Withdrawal Syndrome
  - 2.7.2. Clinical evaluation and diagnosis of Opioid Withdrawal Syndrome in hospitalized patients
  - 2.7.3. Pharmacological management of Opioid Withdrawal Syndrome in the hospital setting
  - 2.7.4. Use of opioid agonist and antagonist drugs in the treatment of withdrawal syndrome
- 2.8. Agitated Patient Management
  - 2.8.1. Epidemiology and risk factors associated with agitation in hospitalized patients
  - 2.8.2. Pharmacotherapy for the management of acute agitation in inpatients
  - 2.8.3. Use of antipsychotics and benzodiazepines in the treatment of agitation
  - 2.8.4. Safety and prevention of complications in the management of the agitated patient
- 2.9. Acute pain management in the patient with substance abuse
  - 2.9.1. Pharmacological interactions between analgesics and substances of abuse
  - 2.9.2. Pharmacological strategies for acute pain management in patients with opioid abuse
  - 2.9.3. Acute pain Treatment in patient with Alcohol abuse
  - 2.9.4. Assessment and management of addiction risk in patients with substance abuse requiring analgesia
- 2.10. Alcohol Withdrawal Syndrome
  - 2.10.1. Clinical evaluation and diagnosis of Alcohol Withdrawal Syndrome in hospitalized patients
  - 2.10.2. Pharmacotherapy for the management of Alcohol Withdrawal Syndrome in the inpatient setting
  - 2.10.3. Use of benzodiazepines and other drugs in the treatment of Alcohol Withdrawal Syndrome
  - 2.10.4. Role of the hospital pharmacist in the management of Alcohol Withdrawal Syndrome



*After completing this program, you will have mastered the complexities of hypertensive emergencies through the use of the latest drugs”*

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.





*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 be confronted with multiple simulated clinical cases based on real patients, in which they will have to investigate, establish hypotheses and ultimately, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Pharmacists learn better, more quickly 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. Gervas, 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, attempting to recreate the actual conditions in a pharmacist'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. Pharmacists who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their 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.

Our 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, which represent a real revolution with respect to simply studying and analyzing cases.

*Pharmacists will learn through real cases and by solving 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 115,000 pharmacists have been trained with unprecedented success in all clinical specialties, regardless of the surgical load. This pedagogical methodology is developed in a highly demanding environment, with a university student body with a high socioeconomic profile and an average age of 43.5 years.

*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 created specifically for the course by specialist pharmacists who will be teaching the course, so that the didactic development is highly specific and accurate.

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.



### Video Techniques and Procedures

TECH introduces students to the latest techniques, to the latest educational advances, to the forefront of current pharmaceutical care procedures. All of this, first hand, and explained and detailed with precision to contribute to assimilation and a better understanding. And best of all, you can watch them as many times as you want.



### Interactive Summaries

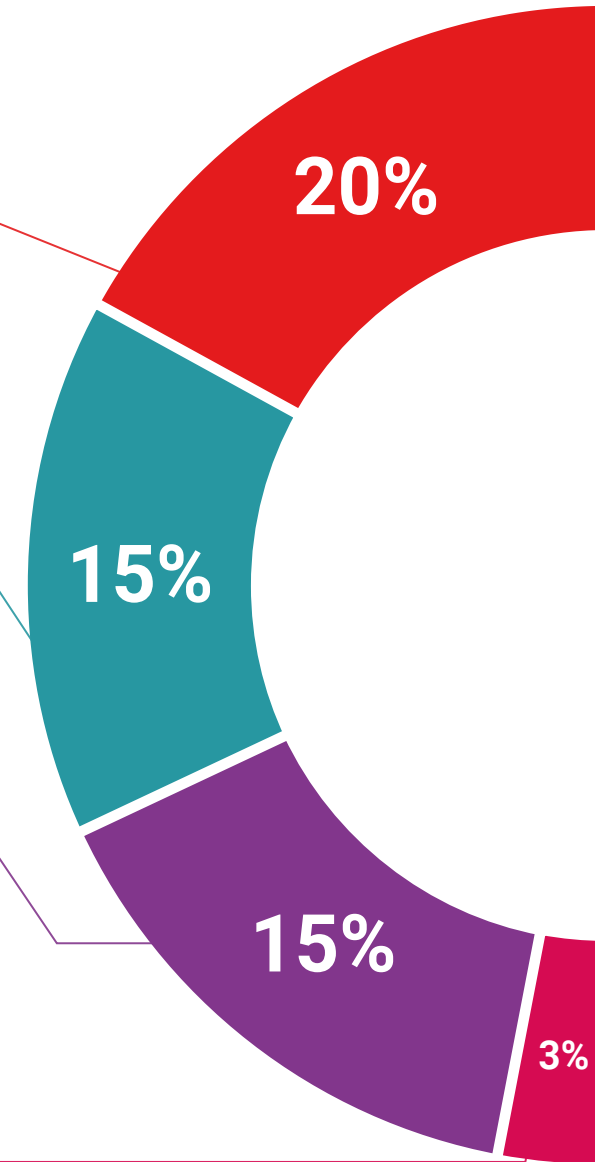
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This unique multimedia content presentation training system 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, we will present you with real case developments in which the expert will guide you through 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

This Postgraduate Certificate in Hospital Pharmacology of the Nervous System 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 Hospital Pharmacology of the Nervous System** 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 Hospital Pharmacology of the Nervous System**

Modality: **online**

Duration: **12 weeks**

Accreditation: **12 ECTS**



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



**Postgraduate Certificate**  
Hospital Pharmacology  
of the Nervous System

- » Modality: online
- » Duration: 12 weeks
- » Certificate: TECH Global University
- » Credits: 12 ECTS
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Certificate

## Hospital Pharmacology of the Nervous System