

# Postgraduate Certificate

Veterinary Pharmacology of  
the Cardiorespiratory, Renal  
and Hemostatic System





## Postgraduate Certificate Veterinary Pharmacology of the Cardiorespiratory, Renal and Hemostatic System

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/pharmacy/postgraduate-certificate/veterinary-pharmacology-cardiorespiratory-renal-hemostatic-system](http://www.techtute.com/us/pharmacy/postgraduate-certificate/veterinary-pharmacology-cardiorespiratory-renal-hemostatic-system)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

---

*p. 20*

06

Certificate

---

*p. 28*

# 01

# Introduction

This Postgraduate Certificate is a complete review of the most up-to-date knowledge in this field. With a multidisciplinary vision, and a complete update that includes the advances in this field of action, it will allow the professional to learn everything necessary to intervene as a specialist in Veterinary Pharmacology of the Cardiorespiratory, Renal and Hemostatic System. This specialization contains the most complete and up-to-date program, designed by experts in Pharmacology, constituting a great tool for pharmacists who wish to train in a sector with a high demand for professionals.





“

*Acquire the most comprehensive knowledge in veterinary pharmacology, as well as the skills and attitudes for practical application in a specialization created for excellence"*

This comprehensive training examines the main pharmacological properties of drug groups that act on the cardiovascular, respiratory, renal and blood systems. A high quality and highly relevant specialization that offers the most advanced resources in online training, to guarantee the student an effective, real and practical learning that will boost their competencies to the highest level in this area of work.

The professional will learn to classify the different drugs that act at the vascular level, such as coagulation modifiers, and cardiac level and will examine the different drugs that act as respiratory stimulants, bronchodilators, expectorants and antitussives.

The program includes practical activities to facilitate students' acquisition and mastery of the theory learned, supporting and complementing the knowledge acquired in the theoretical teaching. The contents are presented to the professional in an attractive and dynamic way in multimedia packages that include videos, images and diagrams in order to reinforce knowledge.

Thanks to its innovative teaching methodology, it allows the student to follow its contents in a totally flexible and personalized way, with great availability on the part of the teachers for consultations, doubts or tutorials.

This **Postgraduate Certificate in Veterinary Pharmacology of the Cardiorespiratory, Renal and Hemostatic System** contains the most complete and up-to-date scientific program on the market. The most important features of the program include:

- ♦ Practical cases presented by experts in Veterinary Pharmacology
- ♦ The graphic, schematic, and eminently 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



*Learn in an efficient way, with a real qualification objective, with this Postgraduate Certificate, unique for its quality and price, in the online teaching market"*

“

*A great opportunity for the veterinary medicine professional to advance his or her competencies and catch up on all the latest developments in pharmacological approaches”*

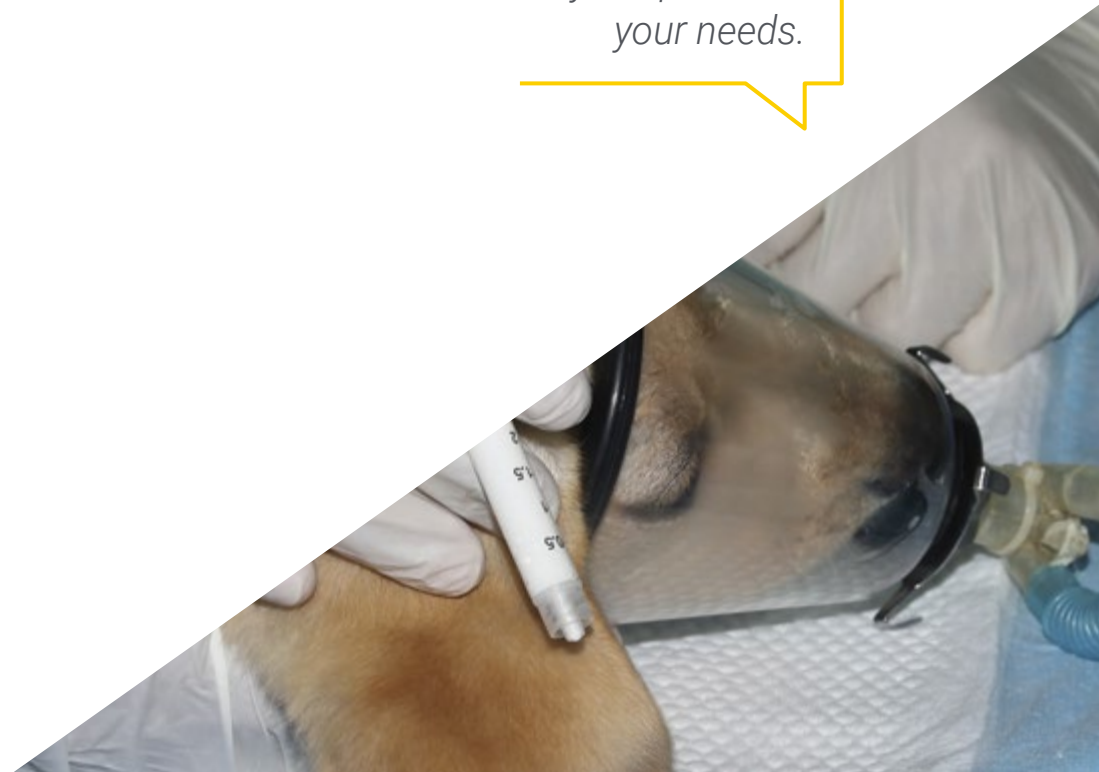
Its teaching staff includes professionals belonging to the field of Veterinary Medicine, who bring to this training the experience of their work, as well as renowned specialists from reference societies and prestigious universities.

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 training programmed to train in real situations.

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

*A unique opportunity to learn with internationally renowned professors, with teaching, clinical and research experience.*

*An innovative learning format that offers you the best training in this area with the comfort of a studio totally adaptable to your needs.*



# 02 Objectives

The design of this Postgraduate Certificate program will allow students to acquire the necessary skills to update their knowledge in the profession after studying in depth the key aspects of Veterinary Pharmacology. Its objective is to provide the student with the required competencies in relation to preclinical or clinical research of drugs used in veterinary medicine, and their application in the therapeutic use of drugs so that he/she can better incorporate into the professional field. The knowledge acquired in the development of the points of the syllabus will drive the professional from a global perspective, with full capacity to achieve the proposed goals.







“

*A complete update on the mechanisms of action, pharmacokinetics, and therapeutic and toxic effects on the cardiovascular, respiratory, renal and blood systems”*



## General Objectives

---

- Examine the pharmacological basis of cardiorespiratory system therapy and homeostasis
- Identify the main therapeutic groups and their indications
- Determine the mechanisms of action of different drug groups, properties and pharmacokinetics
- Develop the student's critical and analytical skills through the resolution of clinical cases





## Specific Objectives

---

- ◆ Describe the mechanisms of action of drugs used to treat heart failure, hypertension or arrhythmias
- ◆ Examine antianemic drugs and growth factors, as well as mechanisms of action, adverse reactions and pharmacokinetics
- ◆ Determine the main routes of administration of drugs used in the cardiorespiratory system and homeostasis
- ◆ Present the drugs used against cough, mucolytics and expectorants and their mechanisms of action, adverse reactions, pharmacokinetics and side effects
- ◆ Solve problems and clinical cases related to the cardiorespiratory system
- ◆ Associate the correct drug to the main symptoms and pathologies of the cardiorespiratory system
- ◆ Safe and effective use of pharmaceuticals



03

# Course Management

The teaching staff of this Postgraduate Certificate is prepared by professionals specialized in the study of Pharmacology, both human and veterinary, with clinical experience in small and large animals. They have extensive and recognized teaching and research experience, with officially recognized six-year research periods, participation in numerous research projects and dissemination of their research both nationally and internationally in high impact journals, books and conferences.







“

*A revolutionary specialization that reconciles TECH's high-quality standards with today's best online training media"*

## Management



### Dr. Santander Ballestín, Sonia

- ♦ Associate Professor of the Department of Pharmacology and Physiology. University of Zaragoza
- ♦ Degree in Biology and Biochemistry, specializing in the area of Pharmacology
- ♦ Teaching Coordinator, Department of Pharmacology, University of Zaragoza, Spain
- ♦ PhD with the European Degree from the University of Zaragoza
- ♦ Master's Degree in Environment and Water Management. Andalusia Business School
- ♦ Lecturer in the Postgraduate Certificate "Introduction to Pharmacology: Principles for the Rational Use of Drugs" Basic Program of the University of Experience of Zaragoza
- ♦ Lecturer in the Postgraduate Certificate "Introduction to Pharmacology: Principles for the Rational Use of Drugs" Basic Program of the University of Experience of Zaragoza
- ♦ Lecturer in the Postgraduate Certificate "Introduction to Pharmacology: Principles for the Rational Use of Drugs" Basic Program of the University of Experience of Zaragoza
- ♦ Evaluation professor in objective structured clinical evaluation of the medical degree
- ♦ Lecturer in the Postgraduate Certificate "Introduction to Pharmacology: Principles for the Rational Use of Drugs" Basic Program of the University of Experience of Zaragoza

## Professors

### Dr. Luesma Bartolomé, María José

- ♦ Study group on prion diseases, vector-borne diseases and emerging zoonoses. University of Zaragoza
- ♦ Degree in Veterinary Medicine. University of Zaragoza
- ♦ Doctor of Veterinary Medicine. University of Zaragoza
- ♦ Study group of the University Research Institute. Research Institute
- ♦ Film and anatomy teacher. University degree: Complementary Academic Activities. University of Zaragoza
- ♦ Master's Degree in Quality Systems Audits (Project: "Implementation of a quality system in a testing laboratory"). Diputación General de Aragón
- ♦ Professor of Anatomy and Histology. University degree: Graduate in Optics and Optometry. University of Zaragoza
- ♦ Professor of the Final Degree Project for University Degrees: Degree in Medicine. University of Zaragoza
- ♦ Professor of Morphology, Development and Biology. University degree: Professional Master's Degree in Initiation to Research in Medicine. University of Zaragoza
- ♦ Certificate B for the use of animals for experimental purposes
- ♦ Recognition of a six-year research period by the University Quality and Prospective Agency of Aragón (Government of Aragón)

### Dr. Lomba Eraso, Laura

- ♦ Professor of Pharmacokinetics at San Jorge University in the Degree in Pharmacy.
- ♦ Licenciado en Ciencias Químicas por la Universidad de Zaragoza
- ♦ Ph.D. with European Mention in Pharmacy University of Zaragoza
- ♦ Graduate in Pharmacy University of Zaragoza
- ♦ Researcher in the field of Green Chemistry
- ♦ Professor of Biochemistry and Molecular Biology II at San Jorge University in the Degree in Pharmacy
- ♦ Professor of Biochemistry and Molecular Biology, Universidad San Jorge, Degree in Pharmacy
- ♦ Professor of Physicochemistry I at the Universidad San Jorge, degree in Pharmacy
- ♦ Professor of Pharmacology Applied to Physiotherapy, Universidad San Jorge, Physiotherapy degree
- ♦ Professor of Biopharmacy and Pharmacokinetics, Universidad San Jorge, Degree in Pharmacy
- ♦ Master's Degree in Environmental Management in Companies
- ♦ Research stay in the Department of Medicinal Chemistry at the Institute of Cancer Therapeutics, Cradford, UK

# 04

# Structure and Content

In its maxim of offering an elite education for all, TECH counts on renowned professionals so that the student acquires a solid knowledge in the specialty of Veterinary Pharmacology. Therefore, this Postgraduate Certificate has a highly qualified team with extensive experience in the sector, which will offer the best tools for students to develop their skills during the course. It provides all the necessary knowledge to be able to perform, in the best possible way, pharmacology in veterinary medicine. A complete and accessible journey that will make a difference in your career progression.







“

*Expert curriculum and quality content are the key to your learning success”*

**Module 1:** Pharmacology of the Cardiovascular, Renal and Respiratory System. Hemostasis

- 1.1. Pharmacology of the Cardiovascular System I
  - 1.1.1. Positive Inotropic and Inodilator Drugs
  - 1.1.2. Sympathomimetic Amines
  - 1.1.3. Glycosides
- 1.2. Pharmacology of the Cardiovascular System II
  - 1.2.1. Diuretic Drugs
- 1.3. Pharmacology of the Cardiovascular System III
  - 1.3.1. Drugs Acting on the Renin-Angiotensin System
  - 1.3.2. Beta-Adrenergic Antagonist Drugs
- 1.4. Pharmacology of the Cardiovascular System IV
  - 1.4.1. Vasodilator Drugs
  - 1.4.2. Calcium Channel Antagonists
- 1.5. Pharmacology of the Cardiovascular System V
  - 1.5.1. Antiarrhythmic Drugs
- 1.6. Pharmacology of the Cardiovascular System VI
  - 1.6.1. Antianginal Drugs
  - 1.6.2. Lipid-Lowering Drugs
- 1.7. Blood Pharmacology I
  - 1.7.1. Anti-Anemia Drugs
    - 1.7.1.1. Iron
    - 1.7.1.2. Folic Acid
    - 1.7.1.3. Vitamin B12
  - 1.7.2. Hematopoietic Growth Factors
    - 1.7.2.1. Erythropoietins
    - 1.7.2.2. Granulocyte Colony Stimulating Factors



- 1.8. Blood Pharmacology II
  - 1.8.1. Antithrombotic Drugs
  - 1.8.2. Anti-Aggregation Drugs
  - 1.8.3. Anticoagulants
  - 1.8.4. Fibrinolytic drugs
- 1.9. Pharmacology of the Respiratory System I
  - 1.9.1. Antitussives
  - 1.9.2. Expectorants
  - 1.9.3. Mucolytics
- 1.10. Pharmacology of the Respiratory System II
  - 1.10.1. Bronchodilators (Methylxanthines, Sympathomimetics, Antimuscarinics)
  - 1.10.2. Anti-inflammatory Drugs used in Asthma
  - 1.10.3. Anti-inflammatory Drugs Used in Chronic Obstructive Pulmonary Disease (Corticosteroids, Mediator Release Inhibitors, Leukotriene Inhibitors)

“

*A unique, key, and decisive training experience to boost your professional development”*



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.

“

*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 Harvard 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

The Postgraduate Certificate in Veterinary Pharmacology of the Cardiorespiratory, Renal and Hemostatic System guarantees, in addition to the most rigorous and up-to-date training, access to a Postgraduate Certificate issued by TECH Technological University.





“

*Successfully complete this training  
and receive your diploma without the  
hassle of travel or paperwork”*

This Postgraduate Certificate in **Veterinary Pharmacology of the Cardiorespiratory, Renal and Hemostatic System** 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** Postgraduate Certificate issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the **Postgraduate Certificate**, and meets the requirements commonly demanded by job markets, competitive examinations and professional career evaluation committees.

Title: **Postgraduate Certificate in Veterinary Pharmacology of the Cardiorespiratory, Renal and Hemostatic System**

Official N° of hours: **150 h.**



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

future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

**tech** technological university

personalized service innovation

knowledge present  
online training  
development languages  
virtual classroom

**Postgraduate Certificate**  
Veterinary Pharmacology of  
the Cardiorespiratory, Renal  
and Hemostatic System

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Certificate

Veterinary Pharmacology of  
the Cardiorespiratory, Renal  
and Hemostatic System