



# Postgraduate Diploma Veterinary Pharmacology and Natural Therapies

» Modality: online

» Duration: 6 months

» Certificate: TECH Technological University

» Dedication: 16h/week

» Schedule: at your own pace

» Exams: online

Website: www.techtitute.com/in/veterinary-medicine/postgraduate-diploma/postgraduate-diploma-veterinary-pharmacology-natural-therapies

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## tech 06 | Introduction

This qualification focuses on Veterinary Pharmacology and Natural Therapies as a response to a service increasingly demanded by owners, who are turning to less invasive and, as far as possible, more natural approaches.

Throughout the program, the concept and evolution of pharmacology and the objectives of Veterinary Pharmacology will be discussed. Pharmacokinetics and Pharmacodynamics, as well as the concepts of drug release, absorption, distribution, metabolism and excretion will be discussed, dealing with the variability of response in different species.

Therefore, this program offers the veterinary professional a complete and up-to-date training with which to continue learning to achieve an elite specialization, through a content that complements the theoretical aspects with clinical practice as a result of the union of the knowledge and experience of the professors who make up the faculty that has created its content.

One of the main problems that a professional encounters when specializing today is time. Reconciling personal life with work and student life is a difficult problem to solve. Precisely for this reason, TECH proposes a revolutionary online study methodology in which the students decide when, how and from where they want to study, thereby facilitating their training, without influencing the rest of the aspects of their lives.

This **Postgraduate Diploma in Veterinary Pharmacology and Natural Therapies** contains the most complete and up-to-date scientific program on the market. The most important features include:

- Innovative and up-to-date diagnostic techniques in infectious diseases and their application in daily clinical practice, including the use of cytology as a diagnostic tool in these diseases
- The most frequent and not so frequent pathologies of infectious origin in dogs from a practical and completely up-to-date point of view
- Infectious Pathologies oriented to the Feline Species, dealing extensively with all those of this species
- "One Health" vision, in which Zoonoses and their implications for public health will be reviewed
- At present, there are no more exotic diseases, and they should be included by the clinician in the differential diagnosis when the epidemiology allows to suspect them
- Prevention and management of all infectious diseases, including clinical, home and community settings





A revolutionary program for its ability to reconcile the highest quality of learning with the most complete online education"

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 knowledge programmed to learn 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 throughout the program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced psychology experts.

A study of all pharmacological aspects and the prevention and control of antibioresistance.

Learn efficiently, with a real qualification objective, with this Postgraduate Diploma, unique for its quality and price, in the online teaching market.







## tech 10 | Objectives



## **General Objectives**

- Examine the general concepts of pharmacology at the veterinary level
- Determine the mechanisms of action of drugs.
- Analyze Pharmacokinetics and Pharmacodynamics
- Review the current legislation on veterinary pharmaceutical products.
- Analyze aspects related to the prescription, dispensing and administration of veterinary pharmaceutical products
- Determine the importance of the responsible and rational use of medicines for global health
- Educate professionals in simple and natural treatments and their integration in the curative activities within Conventional Veterinary Medicine
- Examine the theoretical bases of Natural Medicines; especially homeopathy, phytotherapy and the use of nutraceuticals
- Briefly frame the evolution of the disciplines within a historical context







## **Specific Objectives**

## Module 1. General Pharmacology

- Develop all those processes that affect a drug molecule when administered to an animal species
- Establish the different biological barriers and their significance in therapeutic effectiveness
- Examine the factors that will influence drug absorption, distribution and elimination processes
- Analyze how to manipulate the renal excretion process and its importance in the treatment of intoxications
- Establish based on the pharmacodynamics and pharmacokinetics of a drug, its possible pharmacological interactions
- Identify and characterize at the molecular level the different types of pharmacological receptors
- Determine which second messengers and biochemical pathways are coupled to each of the pharmacological receptor types
- Present the relationship between the molecular phenomenon and the pharmacological effect
- Analyze all the phenomena involved in drug-receptor interaction
- Examine the different types of pharmacological agonism and antagonism
- Correctly establish the differences between the different species that are important for the administration of drugs or their therapeutic efficacy
- Develop the concepts of side, adverse and toxic effects

## tech 12 | Objectives

## Module 2. Legal Framework of Medicine for Veterinary Use. Veterinary Pharmacovigilance

- · Consult and apply current regulations in a practical way in veterinary medicine
- Quickly find the resources available on the AEMPS website and, in particular, the information available on the online Veterinary Medicines Information Center (CIMA Vet).
- Determine everything related to the veterinary prescription being able to make the appropriate prescription in each specific case
- Understand the roles and responsibilities of the various actors involved in the dispensing and supply of veterinary medicinal products
- Be able to make decisions regarding pharmacological treatments with an adequate benefitrisk ratio, or discontinue their use when this is not possible
- Examine the Guidelines for responsible use in different animal species and how to apply them appropriately in veterinary practice
- Examine the responsibility we have in the exercise of our professional work, in the use of medicine, in relation to animal health, human health and the environment
- Assume the importance of our decisions in the use of antimicrobials, in the prevention and control of antimicrobial resistance and know and follow the PRAN guidelines

#### Module 3. Natural Therapies: Homeopathy, Phytotherapy and Nutraceuticals

- Analyze objective clinical signs or manifestations and subjective symptoms or perceptions in homeopathy
- Approach the anamnesis from these objective and subjective manifestations
- Present the Homeopathic Materia Medica and its therapeutic indications
- Determine the rationale behind the development of drugs
- Approach to pathologies from homeopathic repertorization
- Establish the active principles most commonly used in phytotherapy and their application
- Examine the different nutraceutical products and their application





A path to achieve knowledge and professional growth that will propel you towards a greater level of competitiveness in the employment market"





## tech 16 | Course Management

## Management



## Dr. Santander Ballestín, Sonia

- Teaching Coordinator, Department of Pharmacology, University of Zaragoza, Spair
- Lecturer in the university course: "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 Degree in Medicine.
- Degree in Biology and Biochemistry, specializing in the area of Pharmacology
- PhD with the European Degree from the University of Zaragoza
- Master's Degree in Environment and Water Management. Andalusia Business School
- Title of the doctoral program: Biochemistry and Molecular and Cellular Biology

#### **Professors**

#### Ms. Abanto Peiró, María Dolores

- Pharmacist of Health Administration in Alcañiz
- Technical Agricultural Engineering, Literary University of Valencia
- · Agricultural Research Projects at the Valencian Institute of Agrarian Research
- Assistant Pharmacist in Pharmacy Office
- Medical Visitor
- State Pharmacist in the Government Delegation of Aragon
- Inspection and control of drugs in public and judicial security
- Foreign Health Inspection
- Degree in Pharmacy

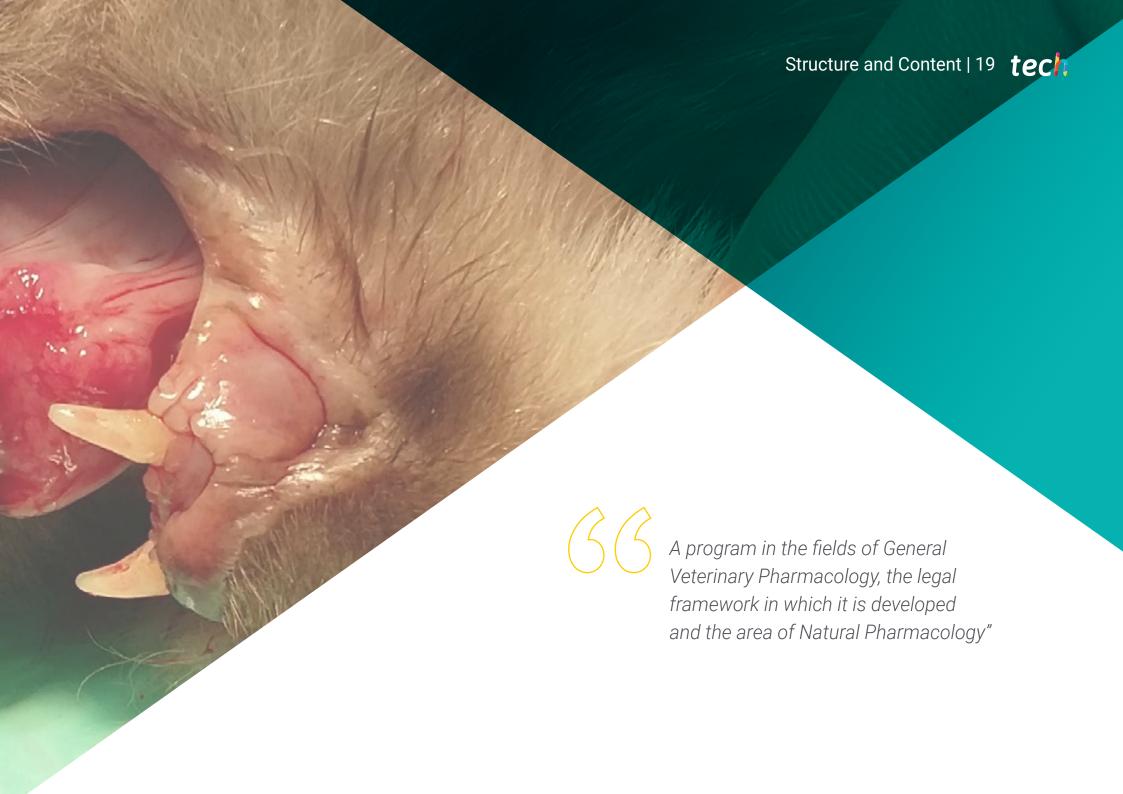
## Ms. González Sancho, Lourdes

- · Health administration Pharmacist. Health Care Dept.
- Pharmacist of Health Administration Dept. of Health and Consumer Affairs
- Food E-Commerce Course Directorate General of Public Health
- Food Composition Labeling and Claims Course. General Directorate of Public Health
- Antibiotic Resistance Course Directorate General of Public Health
- Biocides Regulatory Framework. Health Surveillance HPAI
- Recycling of Plastics and Contaminants in Food and Feed. General Directorate of Public Health
- Course on Audit Systems and Internal Auditing General Directorate of Public Health
- Degree in Pharmacy from the University of Valencia

#### Ms. Luesma Bartolomé, María José

- Veterinarian. Study Group on Prion Diseases, Vectorial Diseases and Emerging Zoonoses at the University of Zaragoza
- Study group of the University Research Institute
- Professor of Film and Anatomy. University degree: Complementary Academic Activities
- Professor of Anatomy and Histology University degree: Graduate in Optics and Optometry.
   University of Zaragoza
- Professor of Final Degree Project University Degree, Bachelor's Degree in Medicine
- Professor of Morphology. Development Biology University degree: Professional Master's Degree in Initiation to Research in Medicine. University of Zaragoza
- Doctor of Veterinary Medicine. Official Doctorate Program in Veterinary Sciences. University of Zaragoza
- Degree in Veterinary Medicine. University of Zaragoza





## tech 20 | Structure and Content

### Module 1. General Pharmacology

- 1.1. Concept and Evolution of Pharmacology. Objectives of Veterinary Pharmacology
  - 1.1.1. Origin
  - 1.1.2. Evolution of Pharmacology as a Science
  - 1.1.3. Veterinary Pharmacology: Objectives
  - 1.1.4. General Concepts
    - 1.1.4.1. Pharmaceuticals
    - 1.1.4.2. Medication
    - 1.1.4.3. Pharmaceutical Forms
    - 1.1.4.4. Others
- 1.2. Pharmacokinetics I: Drug Transport Systems across Biological Membranes.
  - 1.2.1. General Principles
  - 1.2.2. General Transportation Mechanisms
    - 1.2.2.1. Transport Across Cell Membranes
    - 1.2.2.2. Transport Through Intercellular Clefts
- 1.3. Pharmacokinetics II: Routes of Drug Administration. Concept of Absorption
  - 1.3.1. General Principles
  - 1.3.2. Routes of Administrating Medication
    - 1.3.2.1. Enteral Routes
      - 1.3.2.1.1. Oral
      - 1.3.2.1.2. Rectal
      - 1.3.2.1.3. Sublingual
      - 1.3.2.1.4. Others: Inhalation, Otic, Conjunctival, Dermal or Topical
    - 1.3.2.2. Parenteral Routes
      - 1.3.2.2.1. Intravenous
      - 1.3.2.2.2. Intramuscular
      - 1.3.2.2.3. Subcutaneous
      - 1.3.2.2.4. Intrathecal
      - 1.3.2.2.5. Epidural
  - 1.3.3. Absorption Mechanisms
  - 1.3.4. Concept of Bioavailability
  - 1.3.5. Factors that Modify Absorption





## Structure and Content | 21 tech

1.4.	Pharmacokinetics	III Drug	Distribution

- 1.4.1. Distribution Mechanisms
  - 1.4.1.1. Binding to Plasma Proteins
  - 1.4.1.2. Blood-Brain Barrier
  - 1.4.1.3. Placental Barrier
- 1.4.2. Factors that Modify the Distribution
- 1.4.3. Distribution Volume
- 1.5. Pharmacokinetics IV: Drug Distribution II. Pharmacokinetic Compartments
  - 1.5.1. Pharmacokinetic Models
  - 1.5.2. Concepts of the Most Characteristic Parameters
    - 1.5.2.1. Apparent Volume of Distribution
    - 1.5.2.2. Aqueous Compartments
  - 1.5.3. Variability of the Response
- 1.6. Pharmacokinetics V: Drug Elimination: Metabolism
  - 1.6.1. Concept of Metabolism
  - 1.6.2. Phase I and II Metabolic Reactions
  - 1.6.3. Hepatic Microsomal System: Cytochromes. Polymorphisms
  - 1.6.4. Factors Influencing Biotransformation Processes
    - 1.6.4.1. Physiological Factors
    - 1.6.4.2. Pathological Factors
    - 1.6.4.3. Pharmacological Factors (Induction/Inhibition)
- 1.7. Pharmacokinetics VI: Drug Elimination: Excretion
  - 1.7.1. General Mechanisms
  - 1.7.2. Renal Excretion
  - 1.7.3. Biliary Excretion
  - 1.7.4. Other Excretion Routes
    - 1.7.4.1. Saliva
    - 1.7.4.2. Milk
    - 1.7.4.3. Sweat
  - 1.7.5. Elimination Kinetics
    - 1.7.5.1. Elimination Constant and Half-Life
    - 1.7.5.2. Metabolic and Excretion Clearance
  - 1.7.6. Factors that Modify the Excretion

## tech 22 | Structure and Content

- 1.8. Pharmacodynamics: Drug Action Mechanisms Molecular Aspects
  - 1.8.1. General Concepts Receptor
  - 1.8.2. Types of Receivers
    - 1.8.2.1. Ion Channel Associated Receptors
    - 1.8.2.2. Enzyme Receptors
    - 1.8.2.3. Receptors Associated with Prots g
    - 1.8.2.4. Intracellular Receptors
  - 1.8.3. Drug-Receptor Interactions
- 1.9. Adverse Reactions to Medications. Toxicity
  - 1.9.1. Classification of Adverse Reactions According to their Origin
  - 1.9.2. Mechanisms of Production of Adverse Reactions
  - 1.9.3. General Aspects of Drug Toxicity
- 1.10. Pharmacological Interactions
  - 1.10.1. Concept of Pharmacological Interaction
  - 1.10.2. Modifications Induced by Pharmacological Interactions
    - 1.10.2.1. Synergy
    - 1.10.2.2. Agony
    - 1.10.2.3. Antagonism
  - 1.10.3. Pharmacokinetic and Pharmacodynamic Interactions
    - 1.10.3.1. Variability in Response Due to Pharmacokinetic Causes
    - 1.10.3.2. Variability in Response due to Pharmacodynamic Causes

## **Module 2.** Legal Framework of Medicine for Veterinary Use. Veterinary Pharmacovigilance

- 2.2. Prescription of Medicines for Animal Use
  - 2.2.1. Veterinary Prescription
  - 2.2.2. Ordinary Statute of Limitations
  - 2.2.3. Exceptional Requirements
  - 2.2.4. Prescription of Narcotic Drugs
  - 2.2.5. Prescription of Medicated Feed

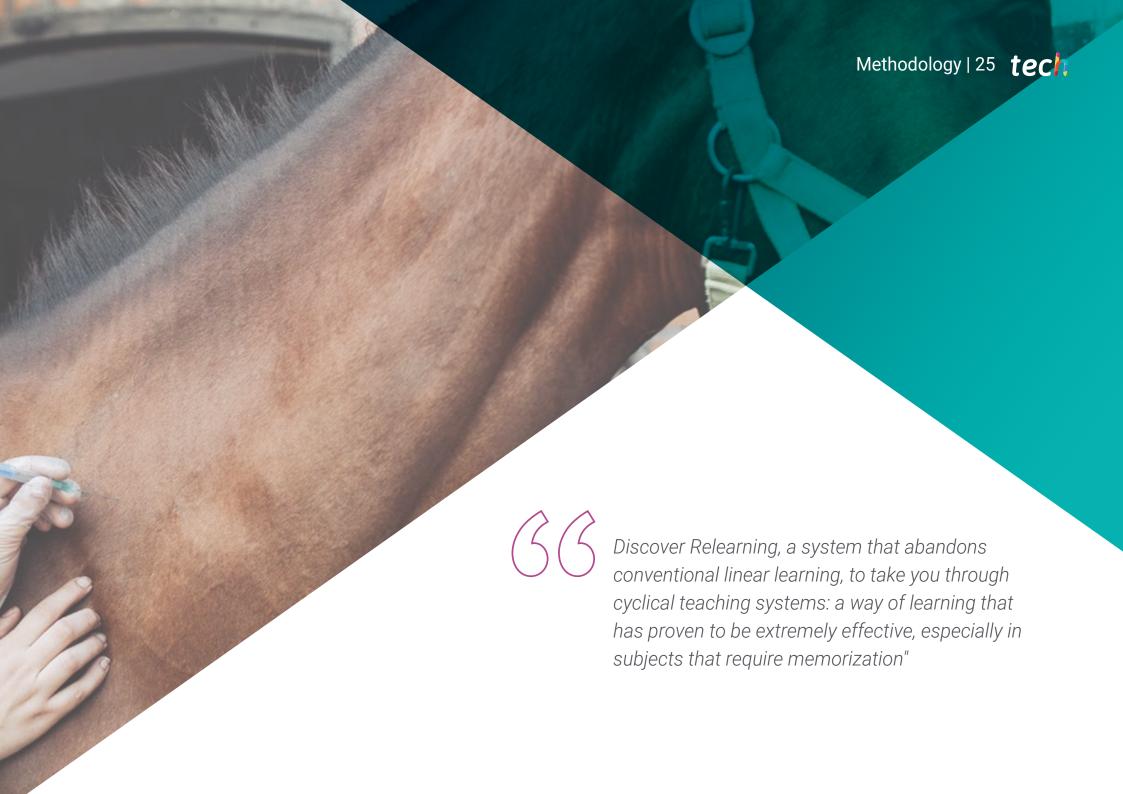
- 2.3. Dispensing of Medicines for Animal Use
  - 2.3.1. Pharmacy Offices
  - 2.3.2. Livestock Entities or Groups
  - 2.3.3. Retail Commercial Establishments
  - 2.3.4. Emergency First Aid Kits
- 2.4. Supply of Medicinal Products for Animal Use to Veterinarians
  - 2.4.1. Professional Practice of Veterinary Medicine
  - 2.4.2. Availability of Veterinary Medicines
  - 2.4.3. Possession and Use of Medicinal Gases
- 2.5. Commercial Presentation and Information on Veterinary Medicinal Products
  - 2.5.1. Packaging and Labeling
  - 2.5.2. Prospectus
  - 2.5.3. Information and Advertising
- 2.6. Veterinary Pharmacovigilance 1
  - 2.6.1. Introduction to Veterinary Pharmacovigilance. Glossary of Terms
  - 2.6.2. Risks Derived from Marketed Medicines
- 2.7. Veterinary Pharmacovigilance 2. Animal Safety
  - 2.7.1. Safe Use of Veterinary Drugs in Animals
  - 2.7.2. Animal Welfare and Disease Prevention in Animals
  - 2.7.3. Guidelines for the Responsible Use of Large Animal Species: Animals for Slaughter
  - 2.7.4. Guidelines for Responsible Use of Companion Animal Species
- 2.8. Veterinary Pharmacovigilance 3. Safety of Persons
  - 2.8.1. Adverse Effects of Veterinary Drugs on Humans
  - 2.8.2. Good Practices in the Use and Administration of Veterinary Medicine
  - 2.8.3. Protective Equipment for the Administration of Veterinary Pharmaceuticals
- 2.9. Veterinary Pharmacovigilance 4. Safety of Foods of Animal Origin
  - 2.9.1. Residues of Veterinary Medicine in Products of Animal Origin
  - 2.9.2. Importance of the Routes of Administration in Waiting Times
  - 2.9.3. Maximum Residue Limits (MRL)
- 2.10. Veterinary Pharmacovigilance 5. Antibiotic Resistance and Safety for the Environment
  - 2.10.1 Importance of Responsible Use of Veterinary Antimicrobials to Prevent Antibiotic Resistance
  - 2.10.3. Categorization of Antibiotics for Veterinary Use
  - 2.10.4. Importance of the Responsible Use of Medicines for the Environment

### Module 3. Natural Therapies: Homeopathy, Phytotherapy and Nutraceuticals

- 3.1. Introduction
  - 3.1.1. Definition of Natural Therapies
  - 3.1.2. Classification
  - 3.1.3. Differences with Conventional Medicine
  - 3.1.4. Regulation
  - 3.1.5. Scientific Evidence
  - 3.1.6. Risk
- 3.2. Homeopathy I
  - 3.2.1. Brief Historical Review. The Hahnemann Concept
  - 3.2.2. Concept of Homeopathy: Key Ideas
  - 3.2.3. Basic Principles
- 3.3. Homeopathy II The Field of Homeopathy
  - 3.3.1. Constitutions
  - 3.3.2. Symptom Modalities
  - 3.3.3. Medical History
  - 3.3.4. Hering Blade
- 3.4. Homeopathy III Properties
  - 3.4.1. Preparation
    - 3.4.1.1. Substances Used in Their Manufacture
    - 3.4.1.2. Excipients
  - 3.4.2. Preparation of Mother Tincture
  - 3 4 3 Dilutions
    - 3.4.3.1. Dilution Methods and Dilutions
    - 3.4.3.2. Dynamization or Succussion
    - 3.4.3.3. Classification of Dilutions
  - 3.4.4. Pharmaceutical Forms
  - 3.4.5. Routes of Administration
- 3.5. Homeopathy IV Related Symptoms
  - 3.5.1. General Aspects
  - 3.5.2. Medical Subject Matter. Hahnemann Treatise
  - 3.5.3. Introduction to the Repertoire

- 8.6. Approach to Pathologies from the Homeopathic Repertorization (I)
  - 3.6.1. Digestive System
  - 3.6.2. Respiratory System
  - 3.6.3. Urinary System
  - 3.6.4. Male and Female Genital Apparatus
- 3.7. Approach to Pathologies from the Homeopathic Repertorization (II)
  - 3.7.1. Mammitis
  - 3.7.2. Tegumentary System
  - 3.7.3. Locomotor System
  - 3.7.4. Sensory Organs
- 3.8. Phytotherapy
  - 3.8.1. Brief Historical Review
  - 3.8.2. Veterinary Phytotherapy
  - 3.8.3. Active Ingredients of Medicinal Plants
  - 3.8.4. Preparations and Forms of Administration
  - 3.8.5. Prescribing and Dispensing Guide
- 3.9. Phytotherapy. Addressing Pathologies
  - 3.9.1. Digestive system
  - 3.9.2. Respiratory System
  - 3.9.3. Urinary System
  - 3.9.4. Male and Female Genital Apparatus
  - 3.9.5. Locomotor System
- 3.10. Nutraceuticals and Functional Foods
  - 3.10.1. Brief Historical Review
  - 3.10.2. Definition
  - 3.10.3. Classification and Application





## tech 26 | Methodology

#### At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, 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, in an attempt to recreate the actual conditions in a veterinarian'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. Veterinarians who follow this method not only manage to assimilate concepts, but also develop their mental capacity through exercises to evaluate real situations and knowledge application
- 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.** The feeling that the effort invested is effective becomes a very important motivation for veterinarians, which translates into a greater interest in learning and an increase in the 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.

Veterinarians 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.





## Methodology | 29 tech

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 65,000 veterinarians have been trained with unprecedented success in all clinical specialties, regardless of the surgical load. Our teaching method is developed in a highly demanding environment, where the students have a high socio-economic 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 training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for 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.



#### **Latest Techniques and Procedures on Video**

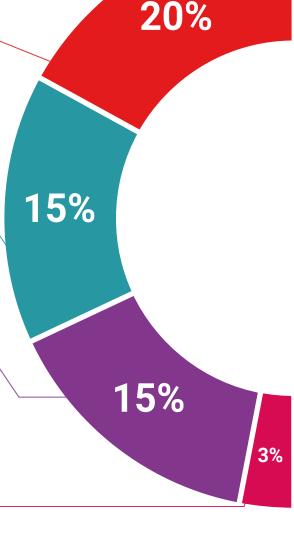
TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current and procedures of veterinary techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch 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 Therefore, TECH presents real cases in which

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



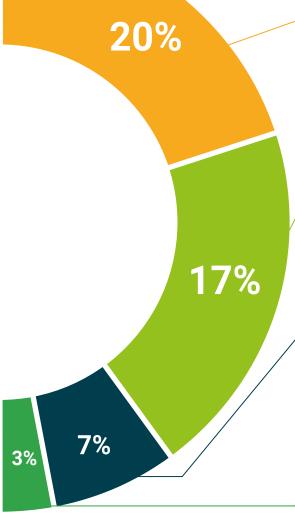
There is scientific evidence suggesting that observing third-party experts can be useful.

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.







## tech 34 | Certificate

This **Postgraduate Diploma in Veterinary Pharmacology and Natural Therapies** 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 Diploma** issued by **TECH Technological University** via tracked delivery\*.

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

Title: Postgraduate Diploma in Veterinary Pharmacology and Natural Therapies
Official N° of Hours: **450 h.** 



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

health confidence people information tutors guarantee accreditation teaching technology learning



## Postgraduate Diploma Veterinary Pharmacology and Natural Therapies

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- » Dedication: 16h/week
- » Schedule: at your own pace
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