# Postgraduate Certificate

## Epidemiology Models in Genetic Diseases

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# Postgraduate Certificate
## Epidemiology Models in Genetic Diseases

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

Website: **www.techtitute.com/in/veterinary-medicine/postgraduate-certificate/epidemiology-models-genetic-diseases**

# Index

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# Introduction

Genetic Epidemiology is essential in the process of detection and prevention of diseases in animal species. The search for experts in this area by companies and projects in the veterinary field is growing, so the demand for them is increasing all the time. This is why TECH has developed a program that seeks to equip students with the skills and knowledge necessary to master this sector. And this, through a syllabus that addresses topics such as Disease Traits, Populations, Data Collection or Risk Calculation.

*Become an expert in Epidemiology Models in Genetic Diseases"*

Genetic Epidemiology seeks to study the importance of diseases in public health, identify populations at risk, detect the causes of disease, evaluate different prevention strategies and possible treatments, based on observations. This requires professionals with very specific and specialized knowledge in the field, which is becoming increasingly necessary and in demand in the labor market.

This is the reason why TECH has designed a Postgraduate Certificate in Epidemiology Models in Genetic Diseases with which it seeks to enhance the skills and competencies of students in this area, so that they can face their work with full guarantee of success. In this way, the content of this program delves into topics such as Data Analysis, Analytical Study Designs, Health Plans, Populations or Disease Trait Distributions, among others.

All this, through a 100% online modality that allows students to combine their studies with their other day-to-day obligations, with total freedom and comfort. In addition, with the most complete multimedia materials, the most up-to-date information and the latest teaching technologies.

This **Postgraduate Certificate in Epidemiology Models in Genetic Diseases** contains the most complete and up-to-date scientific program on the market. Its most notable features are:

- The development of case studies presented by experts in Epidemiology Models in Genetic Diseases
- 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 Genetic Diseases in Veterinary Clinical Trials in just 6 weeks"*

*You will work with the most comprehensive and cutting-edge information on Methods and Estimates of Gene Phylogeny in Populations"*

*Acquire new skills in Data Collection and Analysis strategy, with the most complete and dynamic materials on the market.*

*Enjoy all the main content and a wide variety of additional material, through your tablet, mobile or computer.*

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 educational year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

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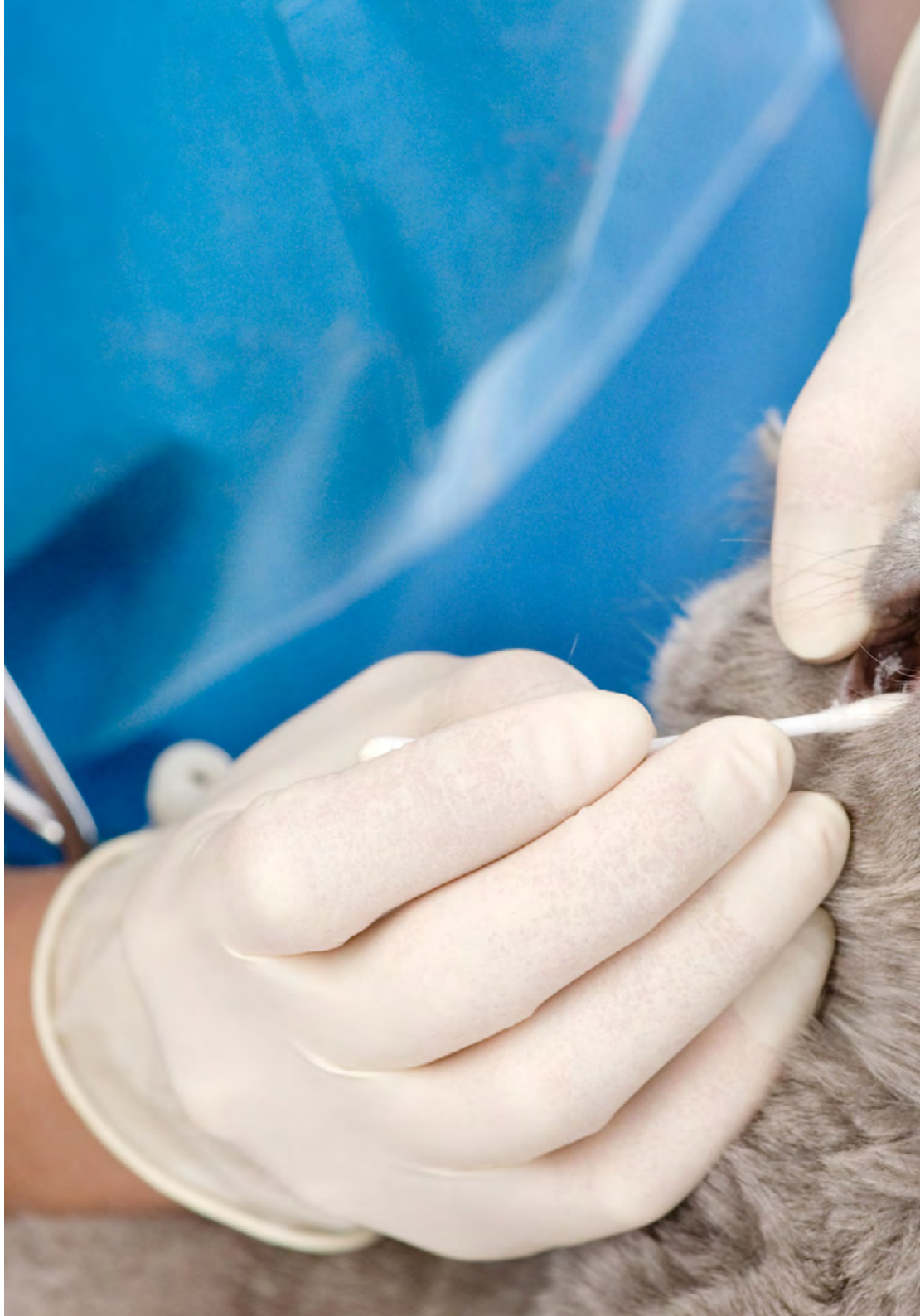
# Objectives

The objective of this program is to provide students with the skills and specific knowledge necessary to be able to face their professional activity in this field, with maximum efficiency and quality in their work. All this, through the most advanced and complete multimedia content in the educational market.

*Reach your most demanding professional goals in the field of Epidemiology, thanks to TECH and its innovative 100% online program"*

## General Objectives

- Generate specialized knowledge in the design and interpretation of a clinical trial
- Examine the key features of clinical trials
- Analyze key analytical concepts in clinical trials
- Justify decisions made to solve problems
- Evaluate behavioral aspects and standardized procedures of clinical trials
- Review legislation on analytical, toxico-pharmacological and clinical standards and protocols for veterinary drug testing
- Assess the regulatory environment in relation to clinical trials
- Develop standards for veterinary Clinical Trials
- Generate specialized knowledge to carry out clinical research
- Establish the correct methodology for conducting Veterinary Clinical Trials
- Develop advanced knowledge for the development of a protocol for the conduct of a clinical trial with veterinary drugs
- Analyze the structure of the different regulatory agencies and organizations and their attributions
- Correctly manage the documentation generated in the framework of the application, follow-up and completion of a veterinary clinical trial



## Specific Objectives

- Determine groups of individuals and examine population parameters useful in Genetic Epidemiology studies
- Analyze the factors and elements in the epidemiological triad
- Demonstrate the contribution of triad factors to genetic disease to expose and justify their applicability to epidemiological studies
- Establish agent-disease causality relationships
- Analyze data and recognize and control sources of bias to differentiate between studies
- Compile data and generate incidence and prevalence measures from raw data
- Formalize disease-exposure association tests
- Present, propose and implement different appropriate designs in relation to observational data

*Boost your professional profile and stand out in one of the areas with the greatest potential in the veterinary field"*

03

# Course Management

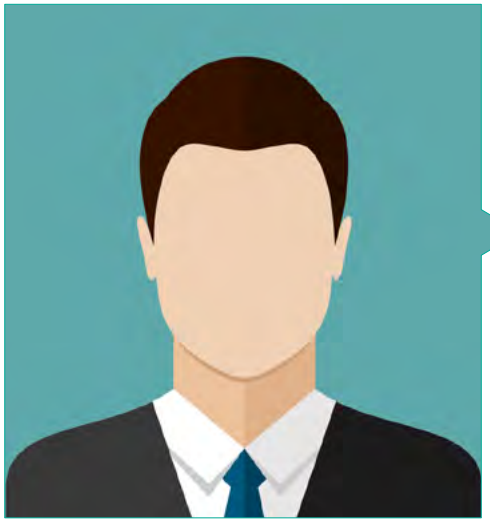
The management and teachers of this syllabus have been rigorously selected by TECH, under its usual high standards and its constant search for the highest quality teaching. In this way, the chosen team of experts has brought together their outstanding experience and more specific knowledge to shape the most dynamic and precise theoretical and practical content possible.

*Ask any questions to our team of experts in Genetic Diseases, they will give you constant support during the program"*

## Management

### Dr. Martín Palomino, Pedro

- Manager of ALJIBE Veterinary Laboratory
- Senior program researcher at the Castilla-La Mancha Research Center Spain
- PhD in Veterinary Medicine from the University of Extremadura
- Diploma in Public Health from the National School of Health (ENS) at the Carlos III Health Institute (ISCIII)
- Master's Degree in Swine Technology from the Faculty of Veterinary Medicine of Murcia at the University of Murcia
- Professor of Infectious Diseases, Zoonoses and Public Health at the Alfonso X el Sabio University



### Dr. Fernández García, José Luis

- Veterinary Doctor
- PhD in Veterinary Medicine from the University of Extremadura
- Graduate in Veterinary with Degree from the University of Extremadura
- Master's Degree in Biotechnology from the CNB Severo Ochoa
- Adjunct Veterinarian, University of Extremadura

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# Structure and Content

This syllabus has been designed based on the most rigorous and up-to-date content, as well as on the most efficient pedagogical methodology, Relearning, which guarantees the best assimilation of the essential concepts by the students. All of this has resulted in innovative teaching materials of the highest quality, which represent a unique opportunity in the academic market.

*Thanks to the Relearning methodology, you will not have to dedicate an excessive amount of time to your studies, and you will be able to combine it with the activities you wish"*

## **Module 1.** Genetic Diseases in Veterinary Clinical Trials (VCT) Veterinary Genetic Epidemiology

1.1. Cities
- 1.1.1. Attributes to Highlight in a Population
  - 1.1.1.1. Common and Ethnicity Attributes
  - 1.1.1.2. Methods and Estimates of Gene Phylogeny in Populations
  - 1.1.1.3. Populations, Social Level and Health Plan: Epidemiological Influence

1.2. Distributions of Disease Traits in Animal Populations. Genetic Databases
- 1.2.1. Genetic Traits and Diseases
  - 1.2.1.1. Qualitative Determinants of Disease
  - 1.2.1.2. Quantitative Traits and Disease Susceptibility
  - 1.2.1.3. Genetic Disease Databases and their Application to Epidemiology
  - 1.2.1.4. NCBI Searches
  - 1.2.1.5. Species-Specific Databases on Genetic Diseases

1.3. Interaction in the Genetic Epidemiological Triad
- 1.3.1. Elements of the Epidemiological Triad
- 1.3.2. Host, Genetic Make-Up and Environment
  - 1.3.2.1. Genetic Make-Up and its Relevance
  - 1.3.2.2. Genotype-Environment Interaction

1.4. Genetic Epidemiology in the Light of Koch's Postulates. Part I
- 1.4.1. Epidemiology of Cytogenetic Animals
- 1.4.2. Diseases Due to Genetic Alterations of Major Effect
  - 1.4.2.1. Cause of Disease: Single Gene Disorders,"Monogenic"
  - 1.4.2.2. Genetic Heterogeneity in Monogenic Diseases

1.5. Genetic Epidemiology in the Light of Koch's Postulates. Part II
- 1.5.1. Multifactorial Cause of Disease: Genetic Component
  - 1.5.1.1. High Heritability
  - 1.5.1.2. Low Heritability
- 1.5.2. Multifactorial Cause of Disease: Environmental Component
  - 1.5.2.1. Infectious Causes as an Environmental Component
  - 1.5.2.2. Cause of Disease and Environmental Exposure
- 1.5.3. Interaction Between Components



1.6. Data Collection and Analysis Strategy: Population Studies vs. Family Studies
- 1.6.1. Population Studies
  - 1.6.1.1. Evaluation of the Distribution of Traits in Populations
  - 1.6.1.2. Identification of Risk Factors and their Importance
- 1.6.2. Family Studies
  - 1.6.2.1. Evaluation of Trait Distribution in Families
  - 1.6.2.2. Identification of Risk Factors, Aggregation and their Importance
- 1.6.3. Combining Population and Family Studies

1.7. Data Collection Strategy and Analysis: Components of a Study of a Common Complex Disease
- 1.7.1. Measuring Disease Burdens
  - 1.7.1.1. Different Ways of Measuring Disease Burdens
- 1.7.2. Morbidity Measures
  - 1.7.2.1. Cumulative Incidence
  - 1.7.2.2. Prevalence
  - 1.7.2.3. Disease Duration

1.8. Main Analytical Study Designs
- 1.8.1. Cross-Sectional Design (Current Prevalence)
- 1.8.2. Cohort Design (Prospective)
- 1.8.3. Case-Control Design (Retrospective)
- 1.8.4. Association Measures

1.9. Data Analysis and Risk Calculations
- 1.9.1. Association Measures
  - 1.9.1.1. Relative Risk Estimates
  - 1.9.1.2. Odds Ratio (OR)
- 1.9.2. Impact Measures
  - 1.9.2.1. Attributable Risk (AR)
  - 1.9.2.2. Population Attributable Risk (PAR)

1.10. Estimates, Data Evaluation and Calculations in SPSS
- 1.10.1. Estimates
- 1.10.2. Assessment of Information
- 1.10.3. SPSS Calculations

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 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:**

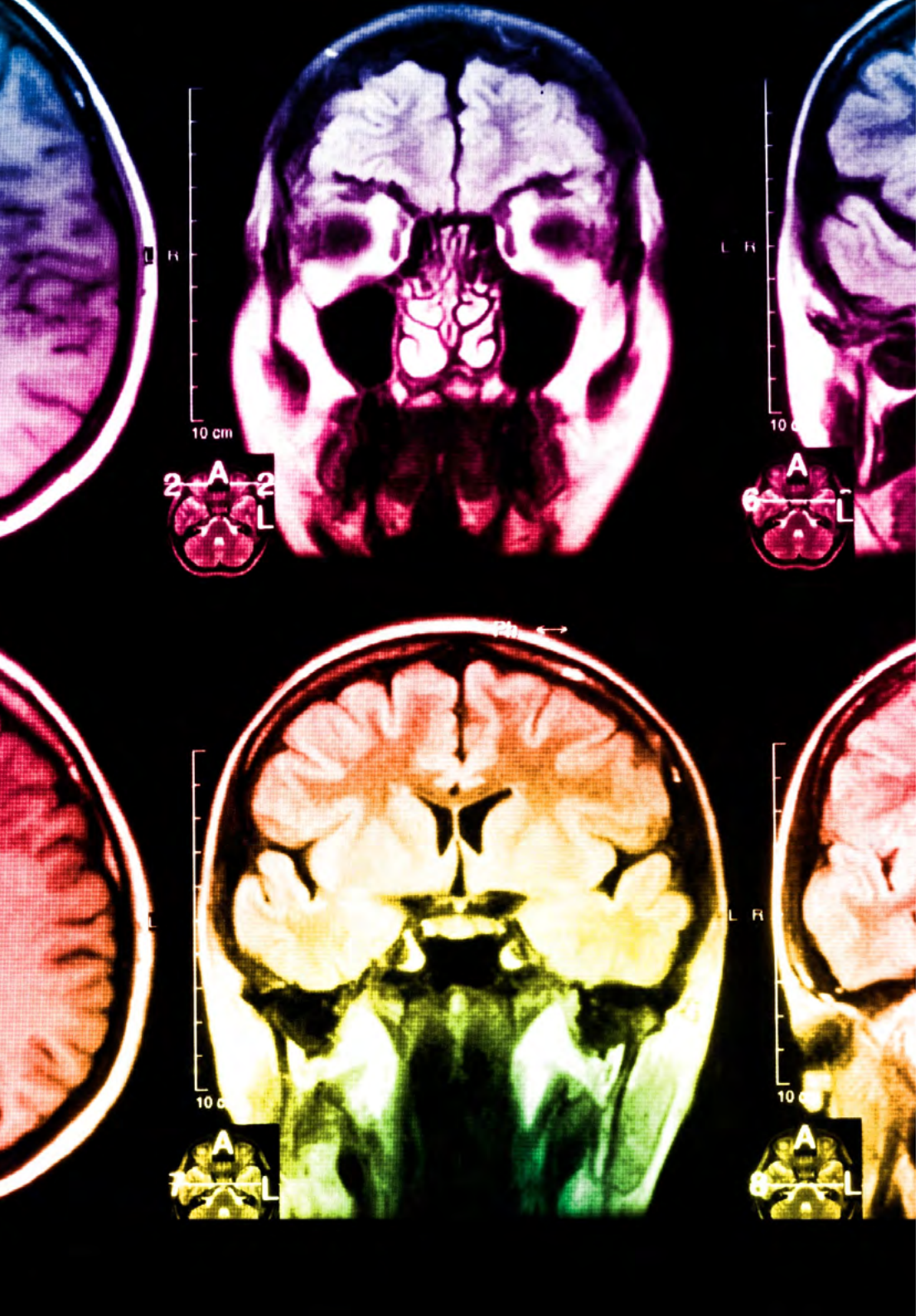
1. Veterinarians who follow this method not only manage to assimilate concepts, but also develop their mental capacity through exercises to evaluate real situations and knowledge application
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real 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.*



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.

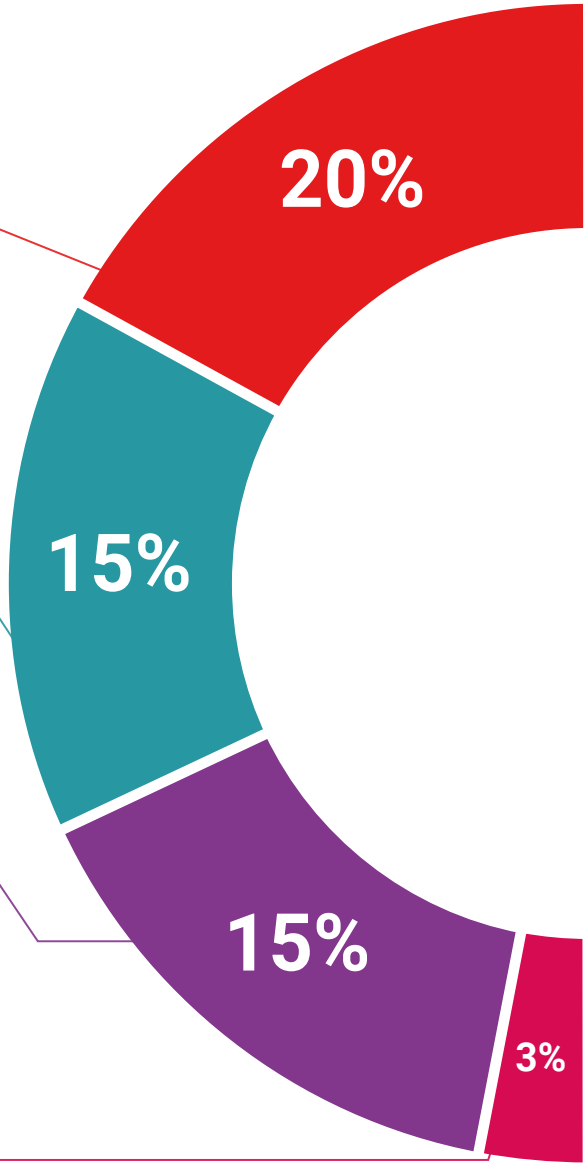
### Interactive Summaries

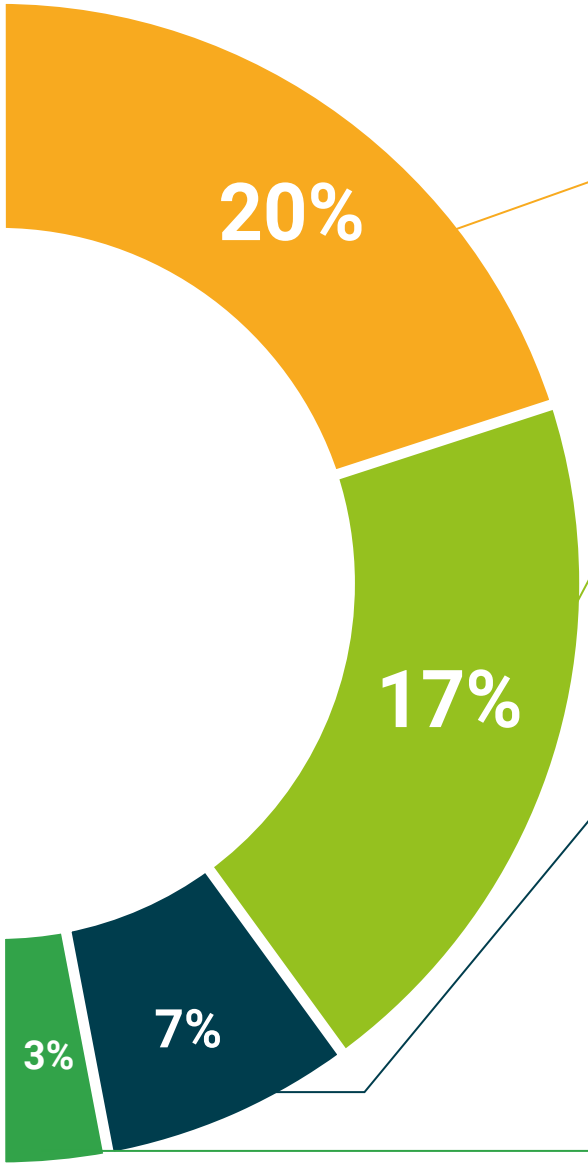
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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

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.

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# Certificate

The Postgraduate Certificate in Epidemiology Models in Genetic Diseases guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.

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

This **Postgraduate Certificate in Epidemiology Models in Genetic Diseases** contains the most complete and up-to-date scientific 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 certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Epidemiology Models in Genetic Diseases**

Official Nº of Hours: **150 h.**


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Awards the following

CERTIFICATE

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Epidemiology Models in Genetic Diseases

This is a qualification awarded by this University, equivalent to 150 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

*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.

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