

# Postgraduate Diploma Epidemiology in Animal Health





## Postgraduate Diploma Epidemiology in Animal Health

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/veterinary-medicine/postgraduate-diploma/postgraduate-diploma-epidemiology-animal-health](http://www.techtute.com/us/veterinary-medicine/postgraduate-diploma/postgraduate-diploma-epidemiology-animal-health)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 18*

05

Methodology

---

*p. 26*

06

Certificate

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*p. 34*

# 01

# Introduction

This Postgraduate Diploma in Epidemiology in Animal Health is designed to equip veterinarians with expertise in line with the concept of One Health. With this training, the professional will be able to identify those processes related to the public health impacts of veterinary medicine (such as zoonotic diseases and antibiotic resistance) and food safety. Knowledge that will be completed with the highest efficiency in the field of Ecology, the laws of nature and the interaction between human communities and their natural, social and cultural environment.







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*If your objective is to broaden your skills set to include new paths of success and development, this is the course for you: a training that aspires to excellence"*

This Postgraduate Diploma in Epidemiology in Animal Health allows professionals to identify epidemics in animals. The program seeks to provide up-to-date and relevant information on the main viruses of the animal kingdom, as well as their spread among species and possible cures.

The first part of the program analyzes the impact of ecology on animal health based on an analysis of population ecology, environmental impact and the use of natural resources in the sustainable development for different farmed animal and wild species.

Thus, this program provides a compendium of up-to-date information for veterinary professionals. As such, the professional will have access to audiovisual material, with practical exercises and complementary readings in a completely digital format.

This program therefore presents professionals with a unique opportunity in the epidemiological field. It will broaden their knowledge and enhance their professional skills to prepare them for whatever the future has in store.

This **Postgraduate Diploma in Epidemiology in Animal Health** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ◆ The latest technology in online teaching software
- ◆ A highly visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand
- ◆ Practical cases presented by practicing experts
- ◆ State-of-the-art interactive video systems
- ◆ Teaching supported by telepractice
- ◆ Continuous updating and recycling systems
- ◆ Autonomous learning: full compatibility with other occupations
- ◆ Practical exercises for self-assessment and learning verification
- ◆ Support groups and educational synergies: questions to the expert, debate and knowledge forums
- ◆ Communication with the teacher and individual reflection work
- ◆ Content that is accessible from any fixed or portable device with an Internet connection
- ◆ Supplementary documentation databases are permanently available, even after finishing the course



*With a methodological design based on proven teaching techniques, this innovative course will use a range of teaching approaches to allow you to learn in a dynamic and effective way”*

“

*Develop tools and competencies of a cognitive, communicative, and specific professional nature, for the evaluation, assessment, measurement, and solution of problems related to animal welfare”*

Our teaching staff is made up of professionals from different fields related to this specialty. In this way we ensure that we deliver the educational update we are aiming for. A multidisciplinary team of professionals with expertise and experience in different areas, will efficiently cover the theoretical knowledge, but above all, will bring practical knowledge from their own experience to the course: one of the factors that makes this program unique.

This mastery of the subject matter is complemented by the effectiveness of the methodological design. Developed by a multidisciplinary team of *e-learning* experts, it integrates the latest advances in educational technology. This way, you will be able to study with a range of comfortable and versatile multimedia tools that will give you the operability you need in your education.

The design of this program is based on Problem-Based Learning: an approach that conceives learning as a highly practical process. To achieve this remotely, we will use telepractice learning: with the help of an innovative interactive video system, and *learning from an expert*, you will be able to acquire the knowledge as if you were facing the scenario you are learning at that moment. A concept that will allow you to integrate and fix learning in a more realistic and permanent way.

*With the experience of working professionals and the analysis of real success stories, in a high-impact training approach.*

*Join the elite, with this highly effective educational specialization and open new paths to your professional progress.*





# 02 Objectives

Our objective is to train highly qualified professionals for the working world. An objective that is complemented, moreover, in a global manner, by promoting human development that lays the foundations for a better society. This objective is materialized in helping professionals to reach a much higher level of competence and control. A goal that you will be able to achieve in just a few months , with a high-intensity and effective program.







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*A complete and total update in  
Epidemiology in Animal Health with the  
most complete and effective training  
program in the online educational market"*



### General Objective

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- Study the main factors impacting animal production and health over the course of the program

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





## Specific Objectives

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### Module 1. Important Animal Production and Health Aspects

- ♦ Determine the biosecurity measures in livestock production
- ♦ Analyze the veterinary controls to be carried out at border control
- ♦ Identify zoonotic diseases and their communication to the authorities
- ♦ Classify antibiotics according to their group of use in animals within the framework of antibiotic resistance
- ♦ Determine the competent bodies in the field of animal health
- ♦ Specify which notifications should be made to the competent authority and in what manner
- ♦ Analyze the different animal identification systems depending on the species in question
- ♦ Develop specialized knowledge on livestock diseases whose declaration is mandatory
- ♦ Examine the existing innovations in animal health and the perspectives of the field

### Module 2. Ecology and Animal Welfare

- ♦ Develop analytical skills and critical judgment through the study of ecological problems
- ♦ Develop the basic concepts of ecology, structure, and functioning
- ♦ Promote innovation as a development tool in animal welfare
- ♦ To develop Specialized Knowledge in Animal Welfare committed to Sustainable Development
- ♦ Strengthen social-ethical processes with viable, effective, and efficient solutions in the field of animal welfare
- ♦ Provide specialist training to students in animal welfare so that they are trained and committed to sustainable development and the environment
- ♦ Encourage the creation and development of innovation programs in animal welfare
- ♦ Strengthen ethical, technical, and social processes to generate viable, effective, and efficient solutions in animal welfare with a focus on "One Health, One Welfare"
- ♦ Promote social awareness processes focused on the creation of short-term solutions for the application of animal welfare

### Module 3. Epidemiology in Animal Health

- ♦ Acquire advanced knowledge in Epidemiology
- ♦ Gain specialist knowledge related to the field of animal health in the design of experiments and epidemiological studies
- ♦ Develop specialized knowledge in the statistical analysis of data in Veterinary Epidemiology
- ♦ Specialize in the use of specific software for Epidemiology
- ♦ Develop skills in Spatial Epidemiology
- ♦ Develop skills to design veterinary health prevention and control strategies
- ♦ Develop skills in the design of Veterinary Health Management

03

# Course Management

Within the concept of total quality of our program, we are proud to put at your disposal a Teaching Staff of the highest level, chosen for their proven experience. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.





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*An impressive teaching staff, made up of professionals from different fields of expertise, will be your teachers during your education: a unique opportunity not to be missed”*

## Management



### Dr. Ruiz Fons, José Francisco

- ♦ Member of the Spanish Society for the Conservation and Study of Mammals (SECEM) and the Wildlife Disease Association (WDA)
- ♦ CSIC Senior Scientist at the Institute for Research in Hunting Resources IREC
- ♦ Researcher in the Health Research Fund at The Macaulay Land Use/James Hutton Research Institute and the Carlos III Health Institute
- ♦ Degree in Veterinary Medicine from the University of Murcia
- ♦ PhD in Biology and Technology of Hunting Resources from the University of Castilla La Mancha

## Professors

### Dr. Díez Valle, Carlos

- ♦ Head of Service of the Agriculture and Livestock Area of the Excma
- ♦ European Doctor and Graduate in Veterinary Medicine from the University of León
- ♦ Member of the Academy of Veterinary Sciences of Castilla y León
- ♦ Official Veterinarian of the Castilla y León Regional Government in Zamora
- ♦ Director of the International School of Agro-environmental Knowledge, Ecognitio S.L

### Dr. Sarmiento García, Ainhoa

- ♦ Veterinarian. Head of the Nutrition Department. Casaseca Livestock, SLU
- ♦ Responsible for the Antibiotic Reduction Program and Animal Welfare. Management of Productive Data of Fattening and Mothers (Pigchamp)
- ♦ Elaboration of Projects. R+D+I Management

### Ms. Gómez García, Andrea

- ♦ Part of the Technical - Commercial team at Alternative Swine Nutrition (ASN)
- ♦ Graduada en Veterinaria por la Universidad de Zaragoza
- ♦ Master in Swine Health and Production by the University of Lérida

### Mr. García Sánchez, Juan

- ♦ PhD in Veterinary Science
- ♦ Degree in Veterinary Medicine (specializing in Animal Medicine and Health). Faculty of Veterinary Medicine of Cáceres, University of Extremadura
- ♦ Degree in Biochemistry, University of Extremadura
- ♦ University Expert Course "Statistics applied to Health Sciences" (UNED) (500 teaching hours)
- ♦ Professional Master's Degree in Environmental Management

**Mr. Risco Pérez, David**

- ♦ Administrator of Neobeitar S.L., a recently created company dedicated to Laboratory Diagnosis, Veterinary Technical Consultancy, and Innovation in Animal Health
- ♦ PhD in Veterinary Medicine from the University of Extremadura. Syva Award for the best Thesis in Animal Health
- ♦ Postdoctoral training at the University of Aveiro (Portugal)
- ♦ Researchers of the Torres Quevedo Program, co-funded by the Ministry of Economy and Competitiveness

**Dr. Morchón García, Rodrigo**

- ♦ Doctor Europeus in Biological Sciences
- ♦ Secretary of the *European Society of Dirofilaria and Angiostrongylus* (ESDA)
- ♦ Spokesman of the Spanish Society of Parasitology
- ♦ Associate Professor in the area of Parasitology at the University of Salamanca

**Dr. González Vega, Francisco**

- ♦ Product manager (Animal Nutrition) Livestock Technician Limited Company Veterinarian
- ♦ Technical Training Manager (CEO) / Docent Autonomous Education Management S.L./ Government of Extremadura; ASAJA ;UPA ; UNEXCA; CESES, S.L.; MHC, S.L
- ♦ Compliance Inspector for the Department of Agriculture / Regional Government of Extremadura
- ♦ Author and contributor to more than 20 articles in scientific journals and/or books

**Dr. Risalde Moya, María Ángeles**

- ♦ PhD from the University of Cordoba with International Mention and Extraordinary Doctorate Award
- ♦ Degree in Veterinary Medicine with Extraordinary Award at the University of Cordoba
- ♦ Collaborator in 16 European, National, or Regional Research Projects (2 as Main Investigator) and 3 R&D contracts with companies (1 as Main Investigator)
- ♦ Author of 122 Communications to Congresses with up to 8 awards for the Best Communication
- ♦ Incorporation in the Department of Comparative Anatomy and Pathology at the University of Cordoba

**Dr. Molina Hernández, Verónica**

- ♦ Phd from the University of Córdoba in the Biosciences and Agroalimentary Sciences Program
- ♦ Degree in Biology from the University of Córdoba
- ♦ Researcher of the Juan de la Cierva National Program. Incorporation in the Department of Comparative Anatomy and Pathology of the University of Cordoba
- ♦ Lecturer in the subjects of Cytology and Histology, General Pathological Anatomy, and Systematic Pathological Anatomy of the Veterinary Degree at the University of Cordoba
- ♦ Codirector of doctoral theses

**Dr. García Bocanegra, Ignacio**

- ♦ PhD in Veterinary Science
- ♦ Graduate of the European College of Zoological Medicine (ECZM) (Wildlife Population Health)
- ♦ Degree in Veterinary Medicine and in Food Science and Technology
- ♦ Master's Degree in Animal Medicine, Health, and Breeding
- ♦ Full Professor of the Department of Animal Health, University of Cordoba
- ♦ Study of the Epidemiology and Control of Infectious Diseases affecting Wild Animals and their interaction with Domestic species in the context of the research group AGR-149 of the University of Cordoba

**Dr. Cano Terriza, David**

- ♦ PhD in Veterinary Science (Excellent Cum Laude) from the University of Cordoba (Spain)
- ♦ Degree in Veterinary Medicine
- ♦ Official Master's Degree in Animal Medicine, Health and Improvement from the University of Cordoba (Spain) with Extraordinary Awards upon completion of the Degree and Master's Degree, respectively
- ♦ Qualified for animal experimentation (B accreditation according to the applicable standards for the protection of animals used for experimental and other scientific purposes, including teaching)



**Dr. Gómez Castañeda, Irma**

- ◆ President of the World Network of Veterinary Specialists in Animal Welfare
- ◆ Doctoral candidate. Veterinarian and Zootechnician
- ◆ General Director of the Animal Welfare Institute, Puebla, Mexico
- ◆ Master in Clinical Veterinary Ethology and Animal Welfare, Universidad Complutense de Madrid (UCM), Spain
- ◆ Postgraduate in Veterinary Clinical Neurology from the Catholic University of Salta, Argentina
- ◆ Master in Education and Doctorate in Education from the UAT, Argentina
- ◆ Graduate in Animal Welfare and Behavioral Medicine from the Latin American Veterinary College of Animal Welfare and Behavioral Medicine Certificate in Animal Behaviour and Welfare, The University of Edinburgh, The Royal School of Veterinary Studies, International Center for Animal Welfare Education. Scotland, United Kingdom:
- ◆ Training in Forensic Veterinary Medicine, Animal Law, and Criminalistics from the Annual Training Program Bogotá, Colombia. Certified in Psychological First Aid
- ◆ Teacher, Researcher, and thesis director in Ethology, Clinical Ethology and Animal Welfare for Undergraduate and Postgraduate Courses, Universidad Autónoma de Barcelona, Spain

**Dr. Díaz Gaona, Cipriano**

- ◆ Doctorate in Veterinary from the University of Córdoba
- ◆ Degree in Veterinary Medicine, specializing in Animal Production and Economics
- ◆ Andrés Núñez de Prado National Prize for Research in Organic Agriculture and Livestock
- ◆ Doctoral Courses carried out in the Department of Animal Production ("Organic Livestock: Management of Farms in Disadvantaged Areas")
- ◆ Specialization in Animal Genetics and Reproduction (Master's Degree in Equine Technology)
- ◆ Honorary collaborator of the Department of Animal Production for 7 academic years





**D. Gómez Gómez, Francisco Javier**

- ♦ Swine Technical Manager at Laboratorios Maymó
- ♦ Degree in Veterinary Medicine from the University of Extremadura and Master in Sales and Marketing Management from EAE Business School
- ♦ Technician in charge of Farms or as External Advisor to Swine veterinarians
- ♦ Member of Porcine Sanitary Defence Group in the province of Salamanca
- ♦ Technical-economic Manager of Farms in all the productive phases of the sector in Inga Food
- ♦ Teacher of External Practices of the Department of Animal Health of the Complutense University of Madrid
- ♦ Pig commercial technician in Ecuphar Veterinaria

**D. Sánchez Tarifa, Eugenio**

- ♦ Veterinary Technical Advisor, Boehringer-Ingelheim Animal Health Spain, s.A.U. Sanitary and Productive Veterinary Consultancy for Swine Companies and Farms
- ♦ Veterinary Technical Service, Ingafood, S.A. Sanitary and Productive Management of Swine Farms in Integration
- ♦ Veterinarian, Veterinary Clinic La Paz
- ♦ Veterinarian in Small Animal Clinic

**Ms. Ranilla García, Jara**

- ♦ Degree in Veterinary Medicine from the University of Leon
- ♦ Degree in Veterinary Medicine by means of the Bachelor's Thesis modality. University of Leon
- ♦ Certificate of Pedagogical Aptitude. University of Leon
- ♦ Professional Master's Degree in Veterinary Research and Food Science and Technology University of Leon
- ♦ Postgraduate Diploma in Small Animal Surgery and Anesthesia. Autonomous University of Barcelona

**Dr. Limón Garduza, Rocío Ivonne**

- ♦ Quality Inspector and Bromatological Expertise at Just Quality System S.L
- ♦ Lecturer in Food Safety at Training Center Mercamadrid (CFM)
- ♦ Responsible for Quality Management and Project Development at KMC, Majadahonda. Madrid
- ♦ Head of the Quality Control Department at Frutas Garralón Imp-Exp, S.A. Mercamadrid. Madrid
- ♦ Bachelor 's Degree in Food Science and Technology. Benemérita Autonomous University, Puebla, Mexico. Approved
- ♦ Doctorate in Agricultural Chemistry and Bromatology Autonomous University of Madrid
- ♦ Master in Food Biotechnology (MBTA). University of Oviedo

**Mr. Romero Castañón, Salvador**

- ♦ Veterinarian and Zootechnician graduated from the Benemérita Universidad Autónoma de Puebla, in Mexico
- ♦ Master of Science in Natural Resources and Rural Development, Colegio de la Frontera Sur, Mexico
- ♦ PhD student in Agricultural and Environmental Sciences
- ♦ Courses at the University of Nebraska, USA, and at the Cayetano Heredia University in Peru
- ♦ Professor-Researcher at the Faculty of Veterinary Medicine and Animal Husbandry at Benemérita Autonomous University, Puebla
- ♦ Member of the IUCN Deer Specialist Group

**Dr. Giesen, Christine**

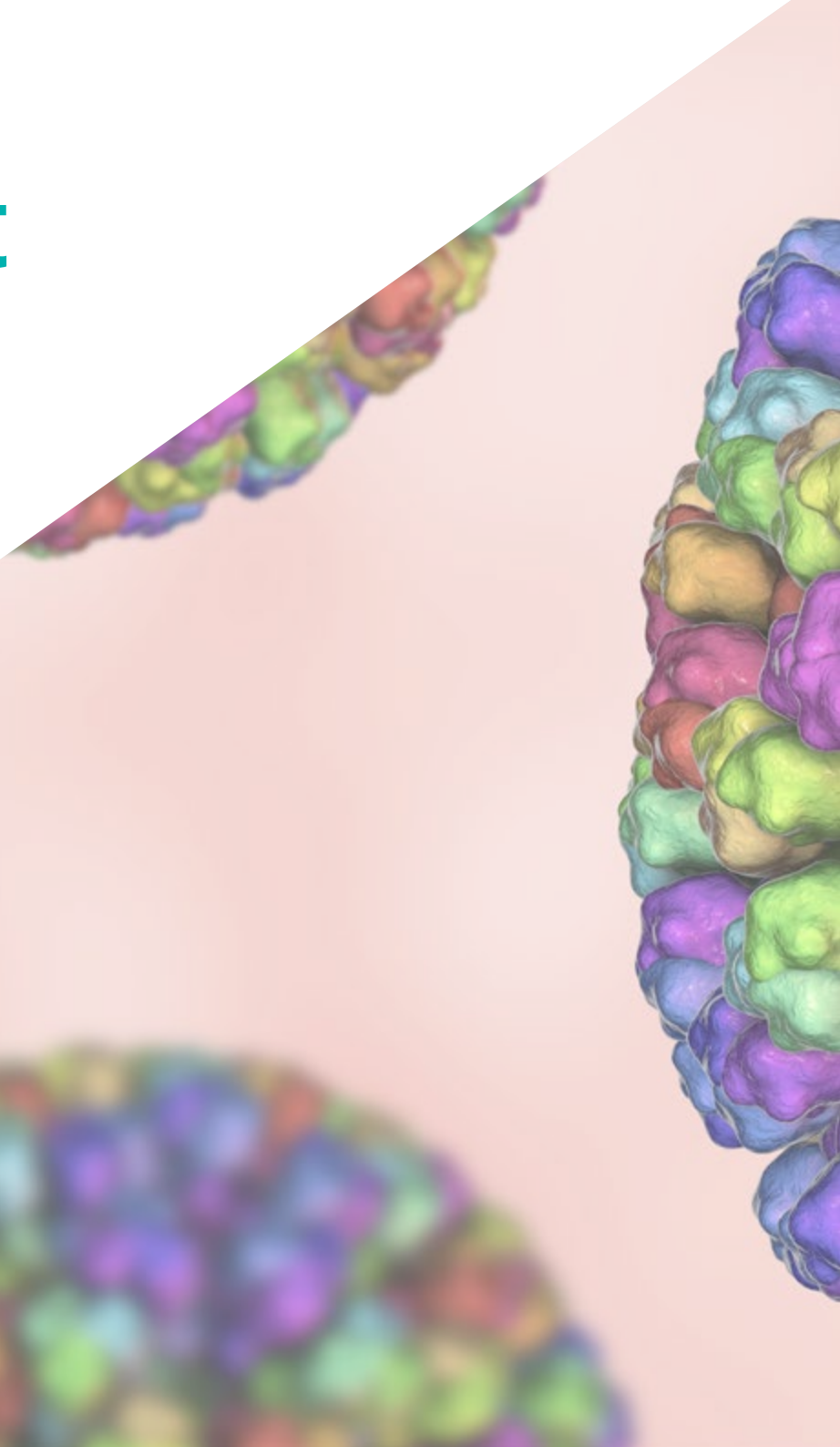
- ♦ Doctor Specialist in Preventive Medicine and Public Health, Infanta Sofía University Hospital. San Sebastián de los Reyes (Madrid)
- ♦ Degree in Medicine from the Complutense University of Madrid
- ♦ Master's Degree in Business Administration, Pharmaceutical Industry and Biotechnology, UDIMA
- ♦ Master's Degree in Tropical Medicine and International Health, Autonomous University of Madrid
- ♦ Master's Degree in Public Health, National School of Health, Carlos III Institute, Madrid
- ♦ Master's Degree in Development Cooperation, National Distance Education University

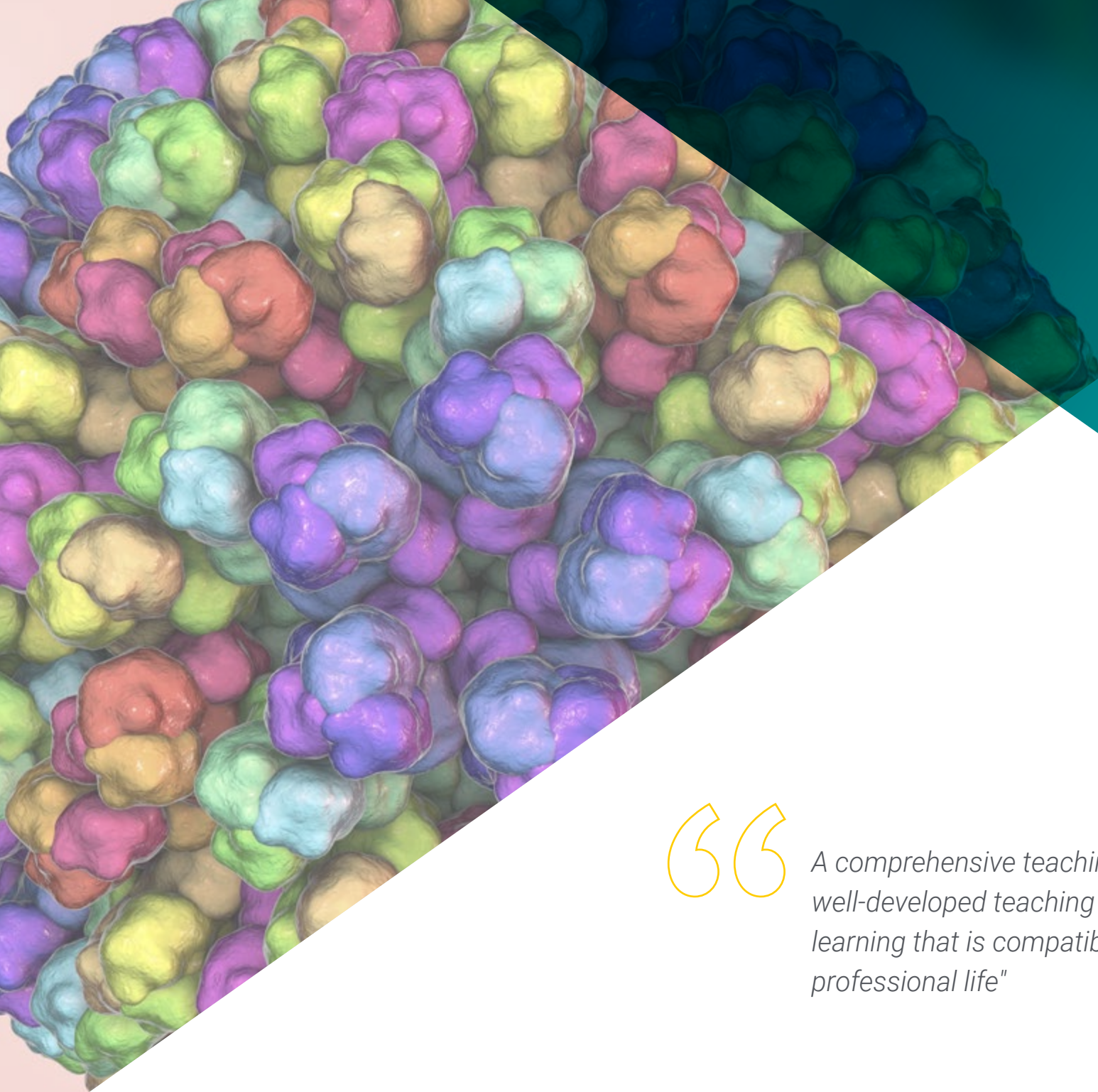
# 04

# Structure and Content

The contents have been developed by different specialists in the area, with a clear purpose: to ensure that our students acquire each and every one of the skills necessary to become true experts in this field.

A complete and well-structured program that will take you to the highest standards of quality and success.





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*A comprehensive teaching program, structured in well-developed teaching units, oriented towards learning that is compatible with your personal and professional life"*



## Module 1. Important Animal Production and Health Aspects

- 1.1. Animal Production
  - 1.1.1. Introduction
  - 1.1.2. Current Situation of the Sector
  - 1.1.3. Role of the Veterinarian
- 1.2. Animal Production Systems
  - 1.2.1. Intensive
  - 1.2.2. Alternative Systems
    - 1.2.2.1. Extensive Production
    - 1.2.2.2. Ecological Production
- 1.3. Livestock Production
  - 1.3.1. Biosecurity Measures
  - 1.3.2. Vaccination and Treatment Plans
- 1.4. Animal Welfare
  - 1.4.1. Current Situation
  - 1.4.2. Animal Welfare Measures
- 1.5. Impacts of Livestock Production on Public Health
  - 1.5.1. Concept of One Health
  - 1.5.2. Zoonotic Diseases
    - 1.5.2.1. Main Zoonotic Diseases
    - 1.5.2.2. Declaration to the Competent Authority
  - 1.7.3. Resistance to Antibiotics
    - 1.7.3.1. Importance of Antibiotic Resistance
    - 1.7.3.2. Categorization of Antibiotics from the Point of View of their Use in Animals
- 1.8. Impact of Animal Production on Food Safety
  - 1.8.1. Food Safety
  - 1.8.2. Major Foodborne Diseases
  - 1.8.3. Declaration
- 1.9. Notifiable Diseases of Livestock
  - 1.9.1. Introduction
  - 1.9.2. Main Diseases
  - 1.9.3. Notification





- 1.10. Competent Veterinary Medicine and Animal Health Authorities
  - 1.10.1. Introduction
  - 1.10.2. National Veterinary Corps
  - 1.10.3. Regional Offices and Veterinary Units
- 1.11. Reference Laboratories
  - 1.11.1. Introduction
  - 1.11.2. Sensitivity and Specificity
  - 1.11.3. Sample Collection Tables

## Module 2. Ecology and Animal Welfare

- 2.1. Introduction to Ecology
  - 2.1.1. Ecology Definition
  - 2.1.2. Abiotic Factors
  - 2.1.3. Biotic Factors
  - 2.1.4. City
  - 2.1.5. Community
- 2.2. Population Ecology
  - 2.2.1. Reproductive Patterns
  - 2.2.2. Extinction
  - 2.2.3. Biogeography
  - 2.2.4. Interspecific Competition
- 2.3. Environmental Impact
  - 2.3.1. Definition
  - 2.3.2. Causes of Environmental Deterioration
  - 2.3.3. Population Growth
  - 2.3.4. Consumerism
- 2.4. Natural Resources
  - 2.4.1. Renewable and Non-Renewable Resources
  - 2.4.2. Alternative energy sources
  - 2.4.3. Protected Areas



- 2.4.4. Sustainable Development
- 2.5. General Aspects of Animal Welfare
  - 2.5.1. Concept of Animal Welfare
    - 2.5.1.1. Introduction
    - 2.5.1.2. History
  - 2.5.2. Definitions of Animal Welfare
    - 2.5.2.1. Historical Definitions of Animal Welfare
  - 2.5.3. Impact of the Environment on Animal Welfare
  - 2.5.4. Health Alert Plans
  - 2.5.5. Physiology and Biochemistry
    - 2.5.5.1. Introduction
  - 2.5.6. Physiology
  - 2.5.7. Biochemistry
  - 2.5.8. The Five Animal Needs
    - 2.5.8.1. Suitable Environment
    - 2.5.8.2. Adequate Diet
    - 2.5.8.3. Normal Behavior
    - 2.5.8.4. Adequate Housing
    - 2.5.8.5. Pain, Suffering, Injury and Illness
  - 2.5.9. Stress and Animal Welfare
    - 2.5.9.1. Relationship between Stress and Animal Welfare
  - 2.5.10. Social Aspects of Animal Welfare
  - 2.5.11. Principles of Animal Welfare
    - 2.5.11.1. What are the Basic Principles of Animal Welfare?
  - 2.5.12. Assessment of Animal Welfare
    - 2.5.12.1. Important Aspects to evaluate Animal Welfare
- 2.6. Animal Behavior
  - 2.6.1. Applied Ethology
    - 2.6.1.1. What is Ethology?
    - 2.6.1.2. Application of Ethology
  - 2.6.2. Learning and Social Behavior
    - 2.6.2.1. Types of Behavior
    - 2.6.2.2. Social Behavior
  - 2.6.3. Biology of Animal Suffering
  - 2.6.4. Feeding
  - 2.6.5. Normal and Abnormal Behavior Patterns
    - 2.6.5.1. Normal Behavior
    - 2.6.5.2. Abnormal Behaviors
  - 2.6.6. Interactions Between Groups of Animals
    - 2.6.6.1. Types of interactions
  - 2.6.7. Causes of Stress
    - 2.6.7.1. Types of Interactions
    - 2.6.7.2. Stressors
    - 2.6.7.3. Physiological Responses to Stress
  - 2.6.8. General Adaptation Syndrome
  - 2.6.9. Animal Sense Organs in Relation to Stress and Injury
    - 2.6.9.1. Introduction
    - 2.6.9.2. Sensory Organs
  - 2.6.10. Animal Welfare and Ethology
    - 2.6.10.1. Introduction
    - 2.6.10.2. Relationship of Sciences in Animal Welfare
- 2.7. One Health
  - 2.7.1. One Welfare, One Health
    - 2.7.1.1. Introduction One Health
    - 2.7.1.2. Economic and Environmental Benefits
    - 2.7.1.3. Health Benefits
  - 2.7.2. International Animal Welfare Standards
  - 2.7.3. World Organization for Animal Health (OIE)
  - 2.7.4. OIE International Standards
  - 2.7.5. Food and Agriculture Organization of the United Nations (FAO)
  - 2.7.6. World Animals Protection (WAP)
  - 2.7.7. Animal Welfare Standards on the Farm
  - 2.7.8. International Consumers

- 2.7.9. Welfare Quality Project
  - 2.7.9.1. Introduction
  - 2.7.9.2. Types of Valuations
- 2.7.10. Animal Welfare Labeling
- 2.8. Legislation
  - 2.8.1. Animal Ethics and Legislation
    - 2.8.1.1. Introduction
    - 2.8.1.2. Veterinary Ethics in Animal Welfare
  - 2.8.2. National and International Legislation on Animal Welfare
  - 2.8.3. Animal Welfare Legal Framework
  - 2.8.4. Specific Legislation on Animal Welfare in Farms
  - 2.8.5. Legislation Related to Religious Rites
  - 2.8.6. Regulations in this Area
  - 2.8.7. Economic Importance of Implementing Animal Welfare legislation
  - 2.8.8. Proposals in Administrative-Criminal Matters
  - 2.8.9. Animal Welfare, Protection, and Law in Legislation
  - 2.8.10. Directives, Standards, and Protocols
- 2.9. Animal Welfare Indicators
  - 2.9.1. Types of Indicators
  - 2.9.2. Biomarkers of Stress as Indicators of Animal Welfare
    - 2.9.2.1. Types of Indicators
  - 2.9.3. Welfare Assessment Protocols
  - 2.9.4. Criteria for Animal Welfare Assessment
  - 2.9.5. Animal Welfare Problems and Their Effects on Animal Health and Production
  - 2.9.6. Health
  - 2.9.7. Diseases
  - 2.9.8. Physiology and Biochemistry
  - 2.9.9. Productivity
  - 2.9.10. Stressors
    - 2.9.10.1. Introduction
    - 2.9.10.2. Types of Stressors

### Module 3. Epidemiology in Animal Health

- 3.1. Concepts and Basis of Epidemiology
  - 3.1.1. Basic Concepts in Epidemiology
  - 3.1.2. The Individual and the Population
  - 3.1.3. Basic concepts of Population Monitoring
  - 3.1.4. Causality and Association
  - 3.1.5. Basic Pathology Concepts
  - 3.1.6. Epidemiology and Demography
  - 3.1.7. Disease and Infection Patterns
  - 3.1.8. Uncertainty in Epidemiology
- 3.2. Experimental Design in Epidemiology
  - 3.2.1. Data Collection in Epidemiology
  - 3.2.2. Sampling Design
  - 3.2.3. Stratification, Representativeness, Balance
  - 3.2.4. Types of Epidemiological Sampling
  - 3.2.5. Sample Size Estimates
  - 3.2.6. Sampling Biases
- 3.3. Descriptive Epidemiology I. Theoretical Bases
  - 3.3.1. Epidemiological Research
  - 3.3.2. Types of Observational Epidemiological Studies
  - 3.3.3. Types of Epidemiological Variables
  - 3.3.4. Descriptive Parameters
  - 3.3.5. Measures of Dispersion
  - 3.3.6. Probability Distributions
  - 3.3.7. Epidemic Curves, Cycles, and Trends
  - 3.3.8. Development of Hypotheses
- 3.4. Descriptive Epidemiology II. Data Analysis
  - 3.4.1. *Open-Access* Epidemiological Software
  - 3.4.2. Sample Size Estimates
  - 3.4.3. Probability Distribution Analysis

- 3.4.4. Descriptive Analysis
- 3.4.5. Association Analysis
- 3.4.6. Applications to Diagnostic Tests
- 3.4.7. Analysis of Absence of Disease/Infection
- 3.5. Analytical Epidemiology I. Theoretical Basis
  - 3.5.1. Basis of Analytical Epidemiology
  - 3.5.2. Hypothesis Analysis
  - 3.5.3. Epidemiological Parameters
  - 3.5.4. Independence of Observations
  - 3.5.5. Case-control Studies
  - 3.5.6. Cohort Studies
  - 3.5.7. Experimental Studies
  - 3.5.8. Basis of Multivariate Analysis
- 3.6. Analytical Epidemiology II. Data Analysis
  - 3.6.1. Estimates of Association in Case-Control Studies
  - 3.6.2. Estimates of Association in Cohort Studies
  - 3.6.3. Inference in Experimental Studies
  - 3.6.4. Biases and Limitations in Analytical Epidemiology
  - 3.6.5. Multivariate Analysis
- 3.7. Analysis of Risk Factors
  - 3.7.1. Definition of Risk Factor
  - 3.7.2. Multidisciplinary Approach to Risk Factor Analysis
  - 3.7.3. Qualitative Risk Analysis
  - 3.7.4. Quantitative Risk Analysis
  - 3.7.5. Applications of Mathematical Modeling in Risk Analysis 4.7.6
- 3.8. Spatial Epidemiology
  - 3.8.1. Basis of Spatial Epidemiology
  - 3.8.2. Contagiousness, Transmission, and Basic Reproductive Rate
  - 3.8.3. Spatial Connectivity
  - 3.8.4. Spatial Dispersal Patterns
  - 3.8.5. Molecular Epidemiology
  - 3.8.6. Disease/Infection Maps
  - 3.8.7. Spatial Correlation Studies







- 3.8.8. Cluster Analysis
- 3.8.9. Network Analysis
- 3.9. Applications of Epidemiology for Prevention and Control
  - 3.9.1. Design of Risk-Based Prevention Strategies
  - 3.9.2. Design of Biosecurity Measures
  - 3.9.3. Control of Risk Factors
  - 3.9.4. Mathematical Models applied to Prevention and Control
- 3.10. Veterinary Health Management
  - 3.10.1. Epidemiological Surveillance Concepts and Systems
  - 3.10.2. Concepts in Veterinary Health Management
  - 3.10.3. Hygiene and Prevention
  - 3.10.4. Zoning

# 05 Methodology

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

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







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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program 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.



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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. 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.



# 06 Certificate

The Postgraduate Diploma in Epidemiology in Animal Health guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma 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 Diploma in Epidemiology in Animal Health** 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.

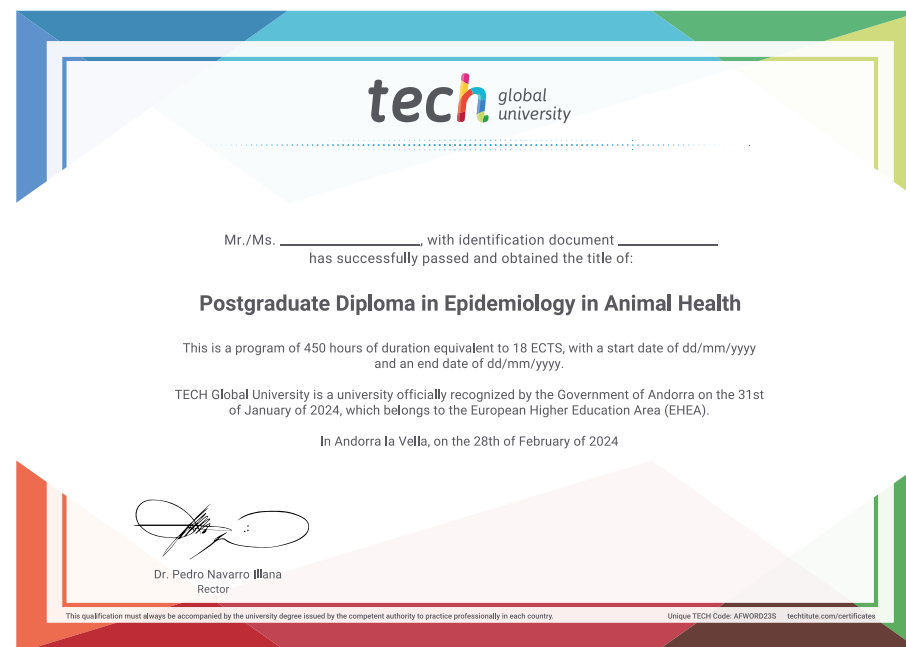
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Epidemiology in Animal Health**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**



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



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education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development language  
virtual classroom



**Postgraduate Diploma**  
Epidemiology in  
Animal Health

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Diploma Epidemiology in Animal Health

