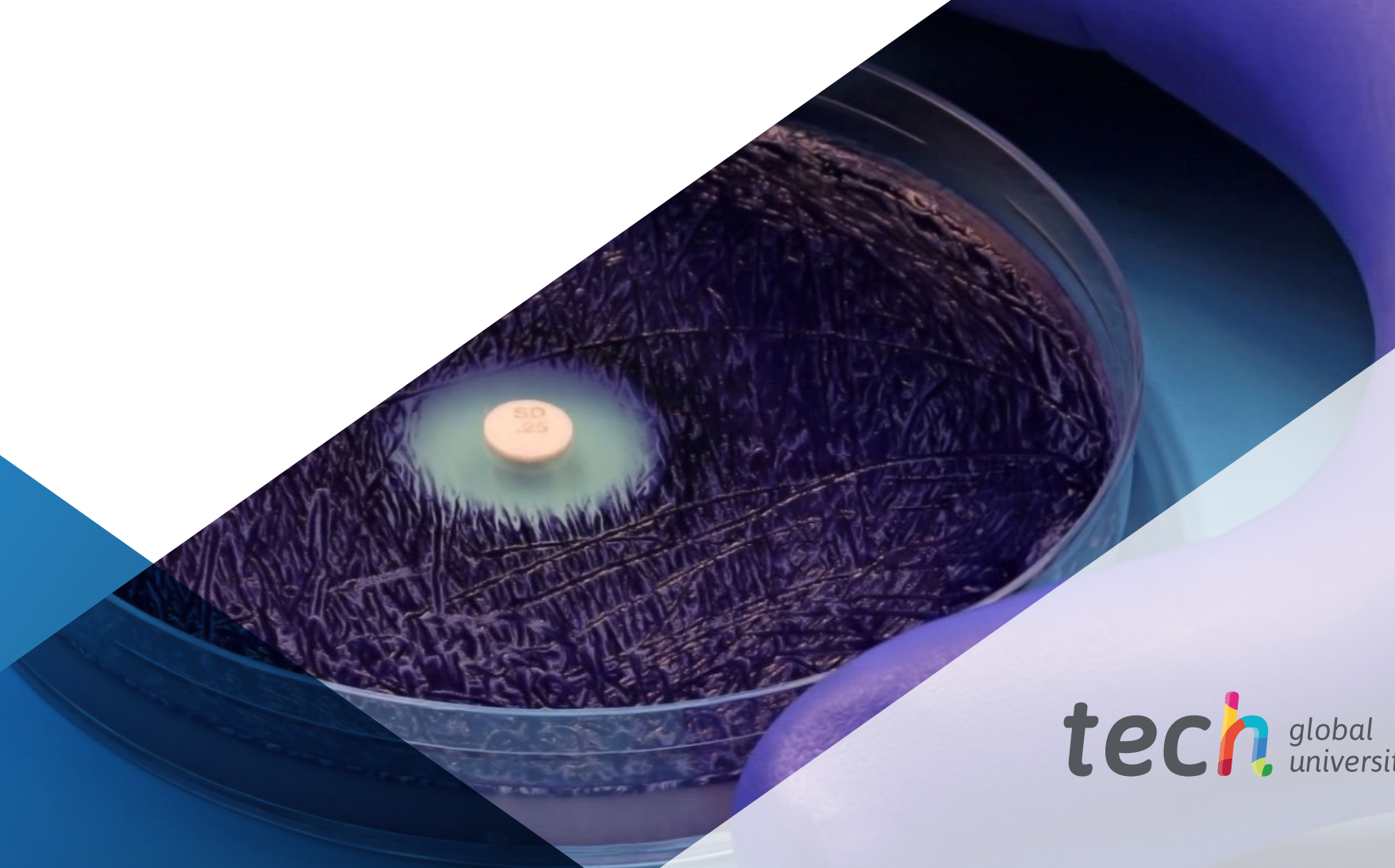


# Postgraduate Certificate

## Antimicrobial Resistance in Animal Health





## Postgraduate Certificate Antimicrobial Resistance in Animal Health

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/medicine/postgraduate-certificate/antimicrobial-resistance-animal-health](http://www.techtute.com/us/medicine/postgraduate-certificate/antimicrobial-resistance-animal-health)

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# 01

# Introduction

Antimicrobial resistance has become one of the greatest threats to global health. In the field of Animal Health, the indiscriminate use of antibiotics in livestock production has accelerated the emergence and spread of resistant bacteria. In this respect, the World Health Organization estimates that up to 80% of total antimicrobial use is in food animals, underscoring the urgent need to address this problem from a One Health perspective. Faced with this, clinicians must manage state-of-the-art techniques to identify bacterial infections using modern diagnostic tests. For this reason, TECH presents a pioneering online program that brings together emerging strategies to mitigate this challenge.



“

*Thanks to this 100% online Postgraduate Certificate, you will perform accurate diagnostics to identify bacterial infections that require antimicrobial therapies using the most innovative laboratory techniques"*

Surveillance of Antimicrobial Resistance in animals is essential for the protection of Public Health. In this regard, data collected through these programs allow clinicians to identify emerging trends, evaluate the effectiveness of interventions and develop evidence-based policies. A recent report reveals that 30% of bacterial infections in farm animals are resistant to standard antibiotic treatments, underscoring the urgency of improving control. Faced with this, practitioners have a responsibility to implement these surveillance systems and to implement strategies to combat this antibiotic rejection.

In this scenario, TECH launches a revolutionary Postgraduate Certificate on Antimicrobial Resistance in Animal Health. Designed by specialists in this field, the academic itinerary will delve into the causes of antibiotic rejection in the veterinary field. Therefore, graduates will select the most appropriate antimicrobials to treat infections. Likewise, the syllabus will delve into the different species of multi-resistant bacteria according to their impact on Animal Health. In the same line, the program will provide the practitioners with the most effective strategic plans to reduce the risk of spreading antibiotic resistance. During the course of the degree, professionals will acquire the One Health approach, which will enable them to establish surveillance systems to monitor and respond to diseases.

Moreover, the university program is complemented by multiple multimedia pills, specialized readings and case study simulations. This will allow physicians to engage in a fully dynamic learning process. The only thing professionals will need is a digital device with Internet access to access the Virtual Campus. At the same time, it will remain available 24 hours a day. And all this without in person attendance or preset schedules.

This **Postgraduate Certificate in Antimicrobial Resistance in Animal Health in the Food Chain** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ The development of practical cases presented by experts in Microbiology, Medicine and Parasitology
- ♦ The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable for professional practice
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ The availability of access to the content from any fixed or portable device with an Internet connection under individual reflection



*A university program that prepares you to meet the challenges in the field of Antimicrobial Resistance in Animal Health"*

“

*You will gain insight into the Dissemination of Antibiotic Resistance Genes, which will allow you to choose the most appropriate therapies to combat pathologies"*

The program's teaching staff includes professionals from the industry who contribute their work experience to this 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 course. For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Looking to incorporate state-of-the-art techniques for diagnosing bacterial infections requiring antimicrobial treatment into your practice? Achieve it through this program.*

*TECH's Relearning methodology will allow you to update your knowledge in an autonomous and progressive way.*



# 02

# Objectives

Upon completion of this Postgraduate Certificate, practitioners will have a comprehensive understanding of Antimicrobial Resistance in Animal Health. At the same time, graduates will master the most innovative techniques to identify bacterial infections and other diseases requiring antimicrobial treatment. They will also gain advanced competencies to perform and interpret antimicrobial susceptibility testing, thus determining the susceptibility of pathogens to different antibiotics. In line with this, specialists will be highly qualified to conduct scientific research that contributes to the understanding and mitigation of Antimicrobial Resistance in Animal Health.





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*You will develop the most effective strategies to reduce the need for Antimicrobials through the use of alternative and preventive management practices”*



## General Objective

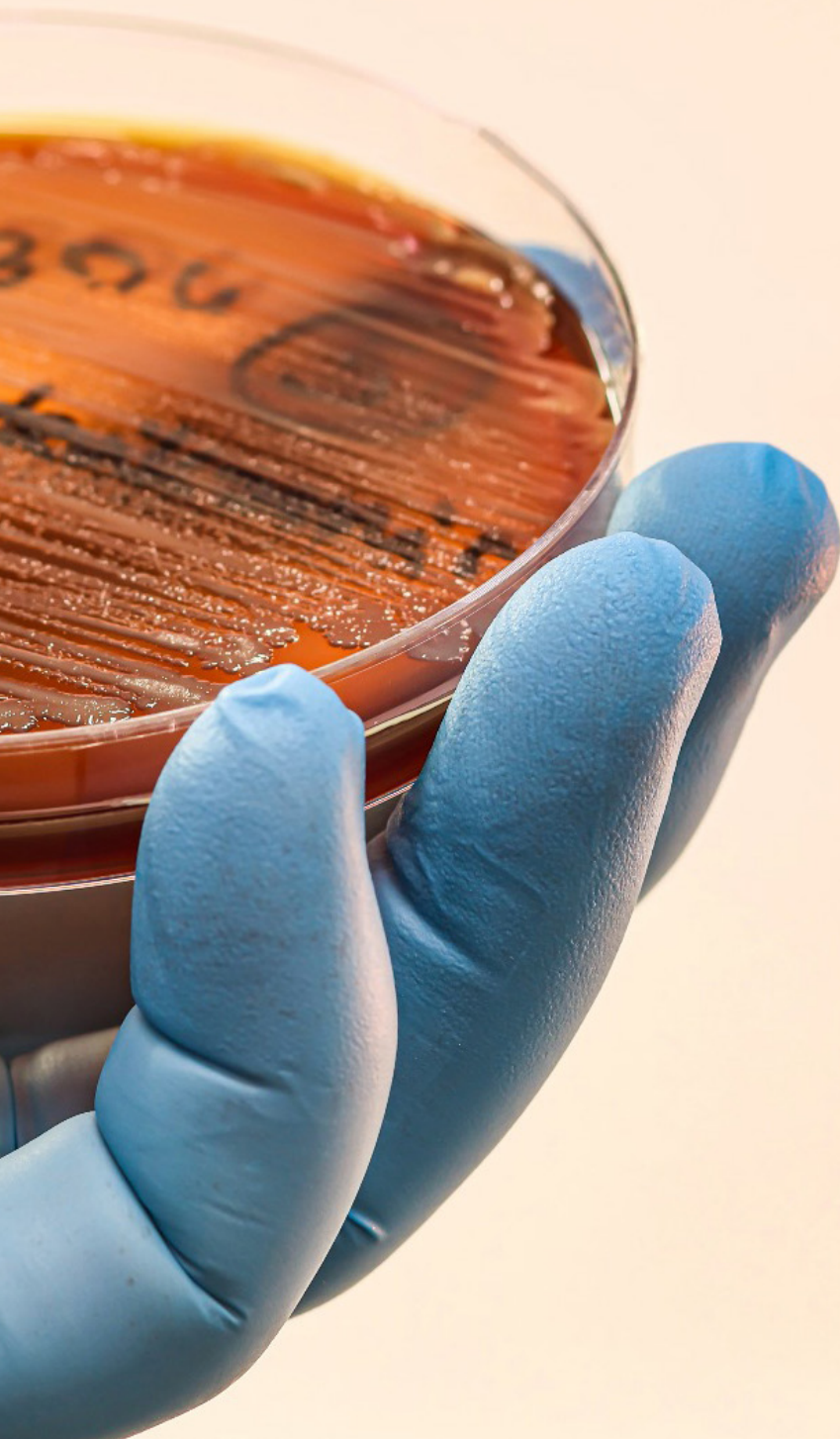
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- Study the presence of multidrug-resistant bacteria in the environment and wildlife, as well as to understand their potential impact on public health

“

*You will learn valuable lessons through real cases in simulated learning environments”*





## Specific Objectives

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- Analyze the causes and mechanisms of bacterial resistance in the veterinary field, including the dissemination of antibiotic resistance genes
- Identify multi-resistant bacterial species of major veterinary importance, and understand their impact on animal health
- Establish preventive and control measures against bacterial resistance in animals, including systems and processes for the appropriate use of antibiotics, and alternatives to antibiotics in livestock and aquaculture
- Determine the objectives of the One Health strategy and its implementation in the study and control of multi-resistant bacteria

# 03

## Course Management

For the design and delivery of this Postgraduate Certificate, TECH has a first class teaching staff made up of experts in Antimicrobial Resistance in Animal Health.

These professionals have an extensive professional background, where they have been part of distinguished health institutions. As a result, they have developed a range of teaching materials that are defined by their high quality and are tailored to the needs of today's labor market. In this way, doctors will gain access to a high-intensity experience that will optimize their daily praxis to a higher level.





“

*You will be advised at all times by the teaching team, made up of professionals with extensive experience in Antimicrobial Resistance in Animal Health”*

## Management



### Dr. Ramos Vivas, José

- Director of the Banco Santander-Universidad Europea del Atlántico Chair in Innovation
- Researcher at the Center for Innovation and Technology of Cantabria (CITICAN)
- Academic of Microbiology and Parasitology at the European University of the Atlantic
- Founder and former director of the Cellular Microbiology Laboratory of the Valdecilla Research Institute (IDIVAL)
- PhD in Biology from the University of León
- Doctor in Sciences from the University of Las Palmas de Gran Canaria
- Degree in Biology from the University of Santiago de Compostela
- Master's Degree in Molecular Biology and Biomedicine from the University of Cantabria
- Member of: CIBERINFEC (MICINN-ISCIII), Member of the Spanish Society of Microbiology and Member of the Spanish Network of Research in Infectious Pathology



## Professors

### Dr. Acosta Arbelo, Félix

- ◆ Researcher at the University Institute IU-ECOQUA of the ULPGC
- ◆ Academician in the Area of Animal Health, Infectious Diseases in the Faculty of Veterinary Medicine, ULPGC
- ◆ European Specialist in Aquatic Animal Health by the European Committee of Veterinary Specialization
- ◆ Specialist in Microbiology and Immunology, Marqués de Valdecilla University Hospital, Cantabria
- ◆ Doctor in Veterinary Medicine, University of Las Palmas de Gran Canaria (ULPGC)
- ◆ Degree in Veterinary Medicine, University of Las Palmas de Gran Canaria (ULPGC)
- ◆ CIBERINFEC (MICINN-ISCIII) and Society of Infectious Diseases and Clinical Microbiology (SEIMC)

“

*A unique, crucial and decisive learning experience to boost your professional development”*



04

# Structure and Content

Through this program, clinicians will have a comprehensive understanding of the mechanisms and underlying causes of Antimicrobial Resistance in Animal Health. The syllabus will explore in depth the reasons for bacterial resistance, taking into account aspects such as the spread of antibiotic rejection genes. Therefore, graduates will promote effective infection control practices in human and veterinary environments. In addition, the syllabus will delve into multi-resistant bacterial species and their impact on Animal Health. The program will also offer the most innovative strategies to reduce the risk of antimicrobial resistance selection.





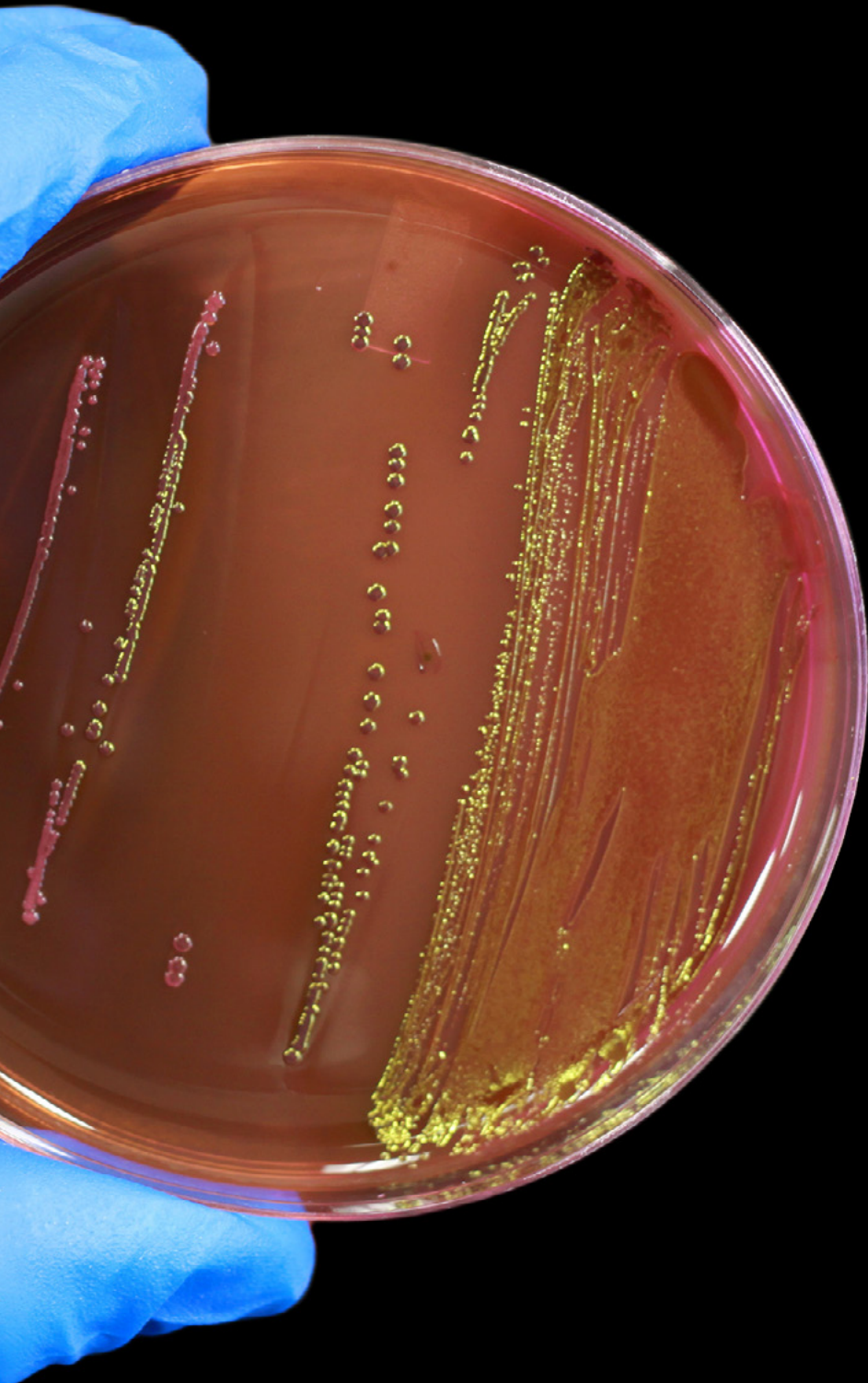
“

*You will incorporate the most sophisticated microbiological diagnostic techniques to detect antimicrobial resistance into your routine practice”*

## Module 1. Antimicrobial Resistance in Animal Health

- 1.1. Antibiotics in the Veterinary Field
  - 1.1.1. Prescription
  - 1.1.2. Acquisition
  - 1.1.3. Misuse of Antibiotics
- 1.2. Multidrug-Resistant Bacteria in the Veterinary Field
  - 1.2.1. Causes of Bacterial Resistance in the Veterinary Field
  - 1.2.2. Dissemination of Antibiotic Resistance Genes (ARGs), Especially through Horizontal Transmission Mediated by Plasmids
  - 1.2.3. Mobile Colistin Resistance Gene (*mcr*)
- 1.3. Multidrug-Resistant Bacterial Species of Veterinary Importance
  - 1.3.1. Pet Pathogens
  - 1.3.2. Cattle Pathogens
  - 1.3.3. Pig Pathogens
  - 1.3.4. Poultry Pathogens
  - 1.3.5. Goat and Sheep Pathogens
  - 1.3.6. Fish and Aquatic Animal Pathogens
- 1.4. Impact of Multi-Resistant Bacteria in Animal Health
  - 1.4.1. Animal Suffering and Losses
  - 1.4.2. Impact on Household Livelihoods
  - 1.4.3. Generation of "Superbugs"
- 1.5. Multidrug-Resistant Bacteria in the Environment and Wildlife
  - 1.5.1. Antibiotic Resistant Bacteria in the Environment
  - 1.5.2. Antibiotic Resistant Bacteria in Wildlife
  - 1.5.3. Antimicrobial Resistant Bacteria in Marine and Inland Waters
- 1.6. Impact of Resistances Detected in Animals and in the Environment on Public Health
  - 1.6.1. Shared Antibiotics in Veterinary Medicine and Human Medicine
  - 1.6.2. Transmission of Resistance from Animals to Humans
  - 1.6.3. Transmission of Resistance from the Environment to Humans





- 1.7. Prevention and Control
  - 1.7.1. Preventive Measures Against Bacterial Resistance in Animals
  - 1.7.2. Systems and Processes for the Effective Use of Antibiotics
  - 1.7.3. Role of Veterinarians and Pet Owners in the Prevention of Bacterial Resistance
  - 1.7.4. Treatments and Alternatives to Antibiotics in Animals
  - 1.7.5. Tools for Limiting the Emergence of Antimicrobial Resistance and its Spread in the Environment
- 1.8. Strategic Plans to Reduce the Risk of Selection and Spread of Antimicrobial Resistance
  - 1.8.1. Monitoring and Surveillance of the Use of Critical Antibiotics
  - 1.8.2. Training and Research
  - 1.8.3. Communication and Prevention
- 1.9. One Health Strategy
  - 1.9.1. Definition and Objectives of the One Health Strategy
  - 1.9.2. Application of the One Health Strategy in the Control of Multidrug-Resistant Bacteria
  - 1.9.3. Success Stories Using the One Health Strategy
- 1.10. Climate Change and Antibiotic Resistance
  - 1.10.1. Increase in Infectious Diseases
  - 1.10.2. Extreme Climatic Conditions
  - 1.10.3. Displacement of L Populations

“ *This university program will prepare you to meet the challenges on Antimicrobial Resistance in Animal Health. Enroll now!*”



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 face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately 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, trying to recreate the real conditions in the physician'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. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

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.

*Professionals 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 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

*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 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.



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical 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 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 Antimicrobial Resistance in Animal Health guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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

This private qualification will allow you to obtain a **Postgraduate Certificate in Antimicrobial Resistance 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** private qualification, 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 Antimicrobial Resistance in Animal Health**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 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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community commitment

**tech** global  
university

**Postgraduate Certificate**  
Antimicrobial Resistance  
in Animal Health

- » Modality: online
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personalized service innovation

knowledge present online training

development languages

virtual classroom

# Postgraduate Certificate

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