

# Postgraduate Certificate

## Antimicrobial Resistance in Animal Health for Nursing





## Postgraduate Certificate Antimicrobial Resistance in Animal Health for Nursing

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

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

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# 01

# Introduction

Antimicrobial Resistance represents one of the greatest challenges to global public health today. As antibiotics lose efficacy, the ability to treat common infections decreases, leading to increased mortality. This problem is relevant in animal health, where the indiscriminate use of antimicrobials in veterinary medicine contributes significantly to the spread of resistant bacteria. Nurses contribute to mitigate this conflict through prevention, education and interdisciplinary collaboration. Hence, it is important for nurses to stay abreast of the most cutting-edge strategies to combat this rejection. For this reason, TECH is launching a revolutionary online university program that brings together the most recent innovations in this field.



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*Thanks to this 100% online Postgraduate Certificate, you will implement the most innovative strategies to control Antimicrobial Resistance in clinical settings”*

According to the World Health Organization, 700,000 people die each year due to infections caused by antimicrobial resistant bacteria. In the veterinary field, the use of antibiotics in animal production contributes significantly to this dilemma. Faced with this situation, nurses are in a unique position to influence the rational use of these drugs. For this reason, these professionals need to incorporate into their daily practice the most sophisticated strategies to prevent antibiotic rejection and promote healthy lifestyle habits.

In this scenario, TECH presents a complete and innovative Postgraduate Certificate in Antimicrobial Resistance in Animal Health for Nursing. The academic itinerary will delve into the causes of antibiotic rejection in the veterinary field, which will enable graduates to implement the best control strategies. In line with this, the syllabus will comprehensively address the various species of multidrug-resistant bacteria, as well as their impact on animal health. In turn, the program will provide nurses with the most effective strategic plans to reduce the risk of spreading antibiotic resistance. During the course of the program, professionals will acquire the One Health approach, which will enable them to establish surveillance systems to monitor and respond to diseases in both humans and animals.

Moreover, the university program is delivered entirely online so that nurses can customize their study time. In addition, TECH employs its innovative learning system: Relearning. This allows professionals to consolidate the concepts of the syllabus in a progressive and natural way, without the need to resort to costly techniques such as traditional memorization. To access the Virtual Campus, all they need is an electronic device with an Internet connection. Therefore, graduates will be able to enjoy the most dynamic educational resources in the market and experience a remarkable leap in quality in their professional careers.

This **Tipo de Programa in Antimicrobial Resistance in Animal Health for Nursing** 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
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



*You will increase the quality of your management with this syllabus and improve your patient care”*

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*You will gain deep understanding of the One Health approach, which will enable you to prevent zoonotic diseases such as Avian Influenza, Rabies or COVID-19”*

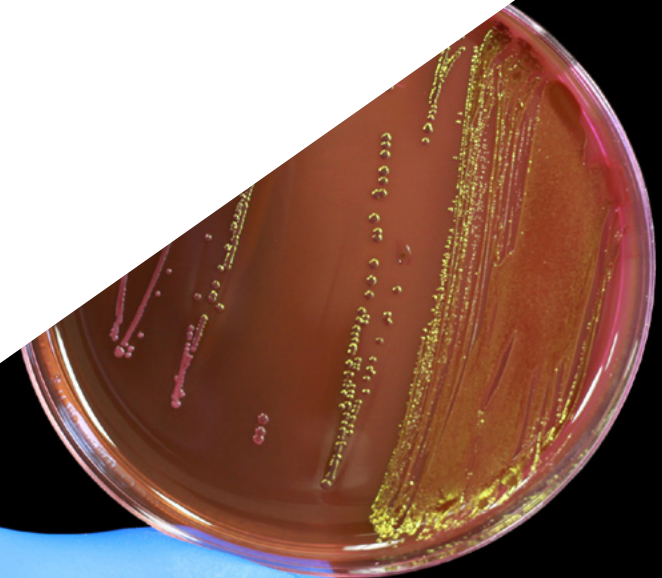
The program's teaching staff includes professionals from the sector who contribute their work experience to this specializing program, as well as renowned specialists from leading societies and prestigious universities.

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 the most innovative strategies to prevent Antimicrobial Resistance into your clinical practice? Achieve it with this program.*

*Thanks to TECH's state-of-the-art Relearning method, you will be able to consolidate the key concepts offered by this university program.*



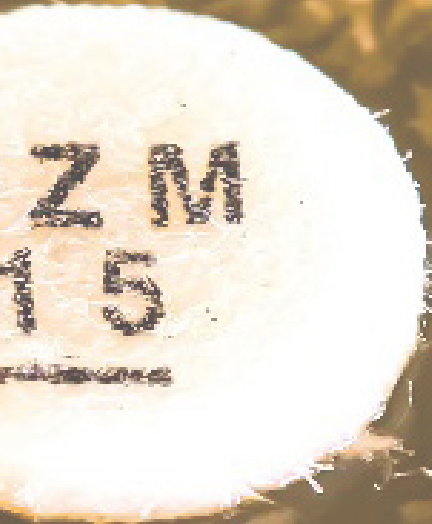
# 02

# Objectives

Through this Postgraduate Certificate, Nursing personnel will have a comprehensive understanding of the different types of Antimicrobials, their mechanisms of action and their scientific basis. Likewise, graduates will gain skills to plan, manage and evaluate health programs aimed at controlling Antimicrobial Resistance. In addition, professionals will be highly qualified to promote responsible antibiotic practices in both animals and humans. Experts will also be able to participate in epidemiological surveillance programs, collecting and analyzing data on Antimicrobial Resistance.







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*You will acquire analytical skills to assess risks associated with Antimicrobial Resistance and design appropriate interventions”*



## General Objectives

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- ◆ Understand how bacterial resistance evolves as new antibiotics are introduced into clinical practice
- ◆ Understand the colonization and infection of patients in Intensive Care Units (ICUs), the different types and risk factors associated with infection
- ◆ Evaluate the impact of Nosocomial Infections in the critically ill patient, including the importance of risk factors and their impact on length of stay in the ICU
- ◆ Analyze the effectiveness of infection prevention strategies, including the use of quality indicators, evaluation tools and continuous improvement tools
- ◆ Understand the pathogenesis of Gram-negative Infections, including the factors related to these bacteria and patients themselves
- ◆ Examine the main infections by Gram Positive Bacteria, including their natural habitat, Nosocomial Infections and community-acquired infections
- ◆ Determine the clinical significance, resistance mechanisms and treatment options for different Gram-positive Bacteria
- ◆ Substantiate the importance of Proteomics and Genomics in the Microbiology laboratory including recent advances and technical and bioinformatics challenges
- ◆ Acquire knowledge on the dissemination of resistant bacteria in food production
- ◆ Study the presence of multidrug-resistant bacteria in the environment and wildlife, as well as to understand their potential impact on public health
- ◆ Acquire expertise on innovative antimicrobial molecules, including antimicrobial peptides and bacteriocins, bacteriophage enzymes and nanoparticles
- ◆ Develop expertise in the discovery methods for new antimicrobial molecules
- ◆ Gain specialized knowledge on Artificial Intelligence (AI) in Microbiology, including current expectations, emerging areas and its cross-cutting nature
- ◆ Understand the role that AI will play in Clinical Microbiology, including the technical lines and challenges for its implementation and deployment in laboratories



## 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



*You will be able to access the Virtual Campus at any time and download the contents to consult them whenever you wish"*

# 03

## Course Management

In accordance with its philosophy of offering the most complete and updated university programs in the academic market, TECH carries out a rigorous selection process to form its teaching staff. For the delivery of this Postgraduate Certificate, TECH brings together the most prominent experts in the field of Antimicrobial Resistance in Animal Health. These professionals have an extensive professional background, where they have worked in internationally recognized health institutions. In this way, they have designed multiple didactic materials defined by their high quality. Thanks to this, nurses will have access to an immersive experience that will raise their professional horizons.



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*You will be able to consult all your doubts directly with the teaching staff, specialized in Antimicrobial Resistance in Animal Health, resulting in a personalized tutoring to your own demands”*

## 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)



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

# 04

# Structure and Content

This program will provide nurses with a solid understanding of the different types of antimicrobials used in the veterinary field. To this end, the syllabus will analyze in detail the causes of bacterial resistance by addressing factors such as the spread of antibiotic rejection genes. Therefore, graduates will promote effective infection control practices in human and veterinary environments. Likewise, the syllabus will delve into multidrug-resistant bacterial species and their impact on Animal Health. The program will also provide the most innovative strategies to reduce the risk of antimicrobial resistance selection.





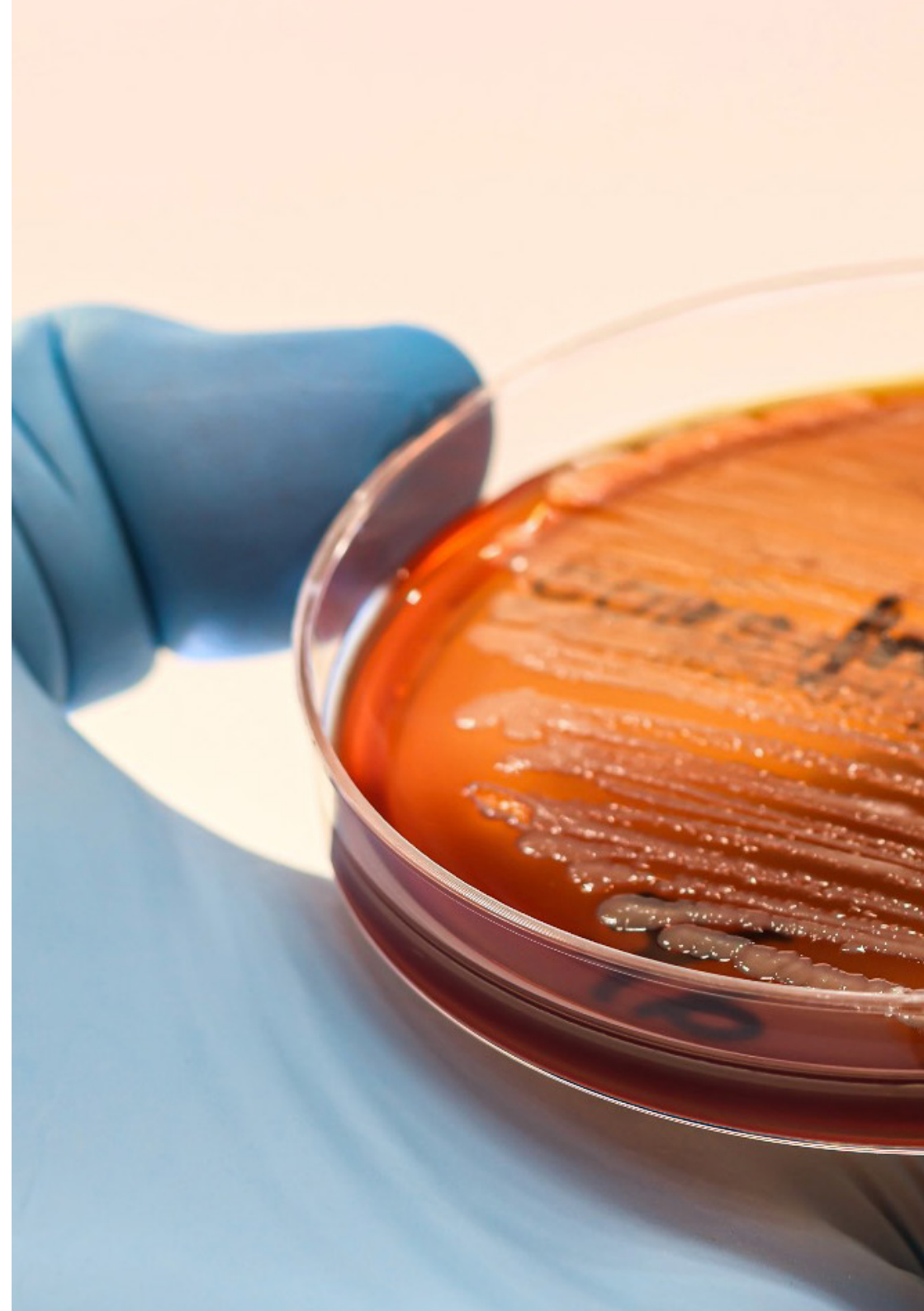


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*You will develop the most effective strategies for the prevention and control of Antimicrobial Resistance in clinical settings”*

## 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 Antibiotic 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 Populations

“*TECH's learning system follows the highest international quality standards to ensure you a quality leap in your career as a Nurse. What are you waiting for to enroll?*”

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.



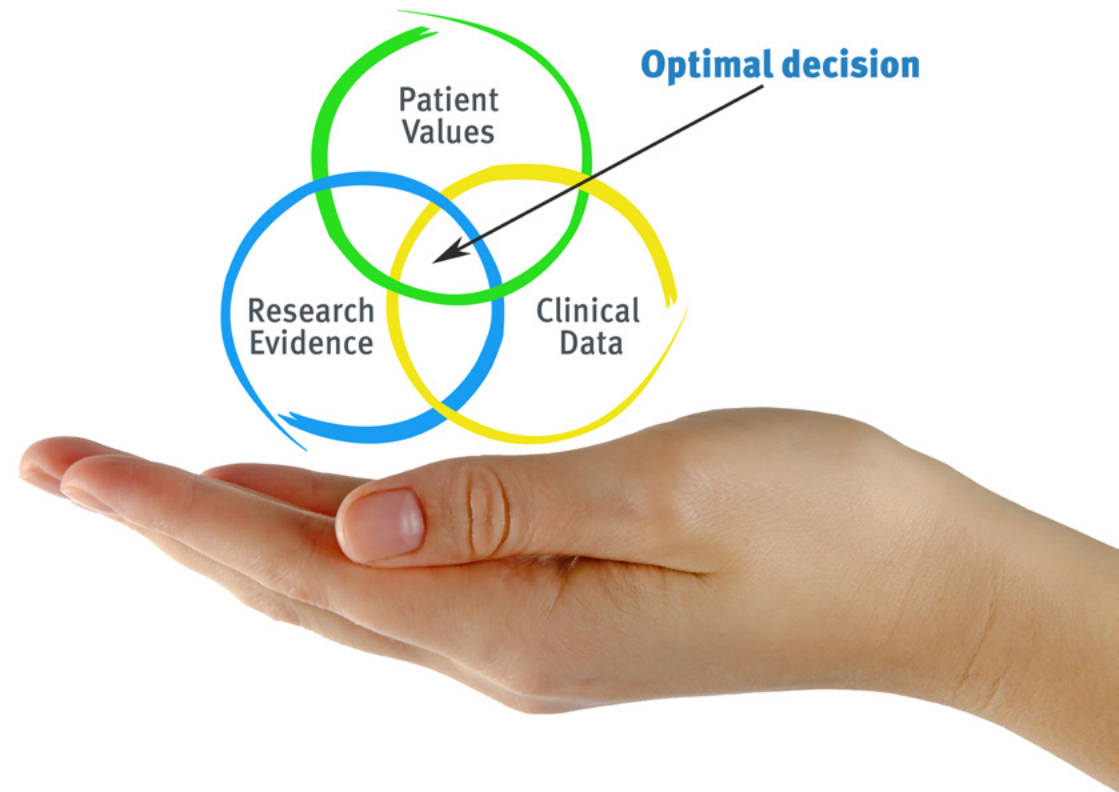
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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## At TECH Nursing School we use the Case Method

In a given situation, what should a professional do? 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. Nurses learn better, faster, and more sustainably over time.

*With TECH, nurses can experience a learning methodology that is shaking the foundations of traditional universities around the world.*



According to Dr. Gervas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, in an attempt to recreate the real conditions in professional nursing 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. Nurses who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the nursing professional to better integrate knowledge acquisition into the hospital setting or primary care.
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 case studies with a 100% online learning system based on repetition combining a minimum of 8 different elements in each lesson, which is a real revolution compared to the simple study and analysis of cases.



*The nurse will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we have trained more than 175,000 nurses with unprecedented success in all specialties regardless of practical workload. 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.

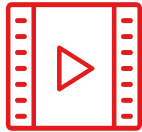
*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

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 really specific and precise.

These contents are then adapted in 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.



### Nursing Techniques and Procedures on Video

We introduce you to the latest techniques, to the latest educational advances, 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 them as many times as you want.



### Interactive Summaries

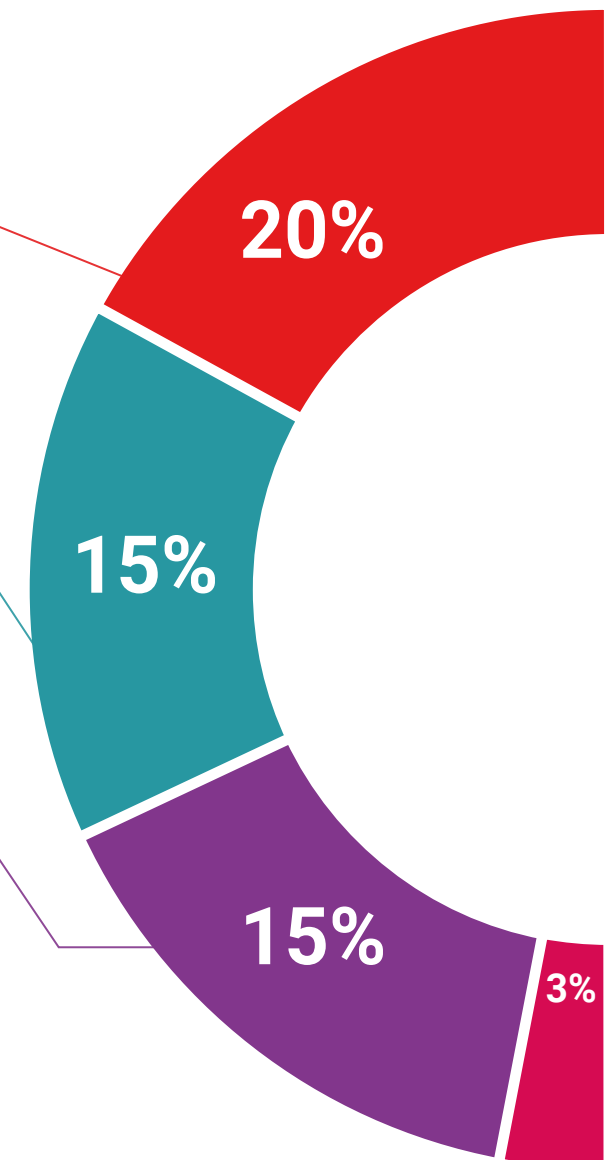
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

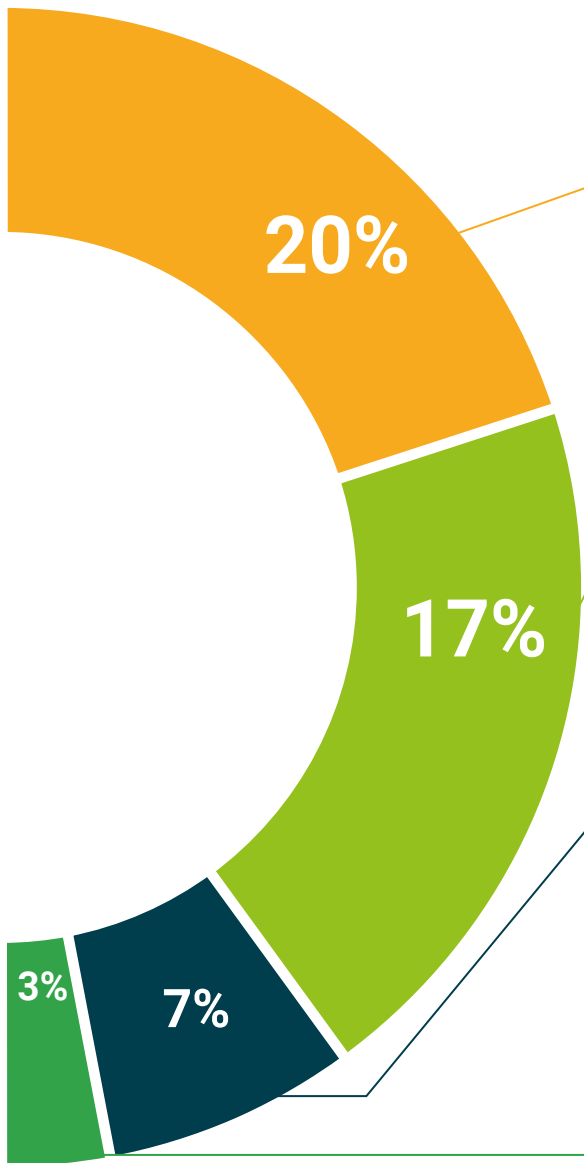
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



### 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

The student's knowledge is periodically assessed and re-assessed throughout the program, through evaluative and self-evaluative activities and exercises: in this way, students can check how they are doing in terms of 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 Certificate in Antimicrobial Resistance in Animal Health for Nursing 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 for Nursing** 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 for Nursing**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





**Postgraduate Certificate**  
Antimicrobial Resistance in  
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- » Modality: online
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