

Postgraduate Diploma

Multidrug-Resistant Bacteria in Human Microbiology and Animal Health





Postgraduate Diploma Multidrug-Resistant Bacteria in Human Microbiology and Animal Health

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

Website: www.techtute.com/us/pharmacy/postgraduate-diploma/postgraduate-diploma-multidrug-resistant-bacteria-human-microbiology-animal-health

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01

Introduction

Multidrug-Resistant Bacteria have developed resistance to multiple classes of antibiotics, hindering the treatment of common infections and complicating routine medical procedures. In humans, these infections have led to increased morbidity and mortality, while in animal health, they have compromised the efficacy of treatments in livestock production. Therefore, continuous surveillance and implementation of control strategies are crucial to mitigate the impact of this global problem in both sectors. In this scenario, TECH has created a 100% online program, offering adaptability according to the individual needs of the students, eliminating the need to travel to a physical location or adjust to pre-established schedules. In addition, it is based on the innovative learning methodology known as Relearning.



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Thanks to this 100% online Postgraduate Diploma, you will gain advanced knowledge about the causes and mechanisms of bacterial resistance, both in humans and animals, applying them in your daily practice"

Multidrug-Resistant Bacteria have complicated the treatment of infections in both humans and animals. This phenomenon has intensified due to the excessive and inappropriate use of antibiotics in medicine and agriculture, as well as the transmission of resistance genes between different bacterial species. Therefore, the emergence of these bacteria has driven the urgent need to develop new therapeutic and management strategies.

This is how this Postgraduate Diploma is born, which will address bacterial resistance in human pathology, deeply analyzing the causes that promote it. It will also examine, from the scarcity of new antibiotics, to socioeconomic factors and health policies that influence its development and spread. In addition, the current global situation of antibiotic resistance will be analyzed, with emphasis on statistics and regional trends.

The study plan will also focus on antimicrobial resistance in animal health, exploring the causes and mechanisms behind bacterial resistance in the veterinary field. It will also identify the most relevant multidrug-resistant bacterial species and evaluate their impact on animal health, introducing preventive and control measures to mitigate bacterial resistance in animals, including the adequate management of antibiotics and viable alternatives in livestock and aquaculture.

Finally, the agenda will focus on Multidrug-Resistant Bacteria in the food chain, analyzing the crucial role it plays in the spread of antibiotic resistance. In this way, the risks associated with food of animal and plant origin, as well as water, as vectors for the transmission of resistant bacteria will be explored.

These comprehensive resources will offer graduates a fully online methodology, allowing them to organize their study schedule according to their personal and work commitments. In addition, the advanced Relearning system will be implemented, which facilitates deep understanding of key concepts through strategic repetition. In this way, they will be able to learn at their own pace and fully master the latest scientific evidence available.

This **Postgraduate Diploma in Multidrug-Resistant Bacteria in Human Microbiology and Animal Health** 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 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



You will expand your role as a pharmacist beyond dispensing medications, becoming a key player in early disease detection and health promotion"

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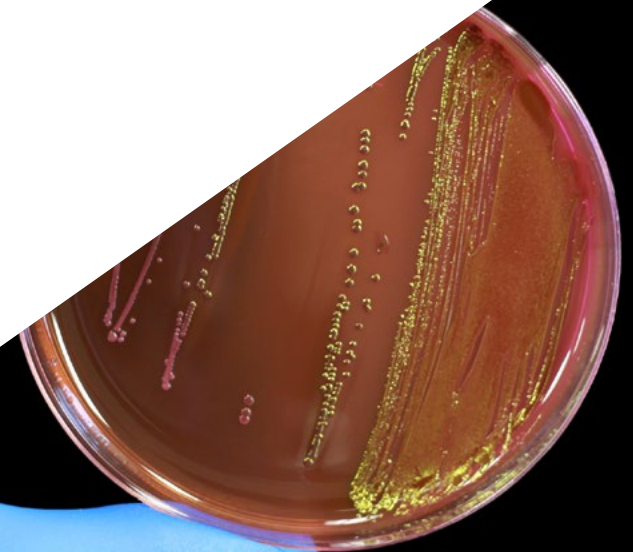
You will gain an in-depth understanding of how the food chain contributes to the spread and persistence of bacterial resistance, driving the need for effective management and control measures”

Bet on TECH! You will delve into the importance of the One Health strategy to integrate efforts in proper antibiotic management and viable alternatives for livestock and aquaculture, in a global approach.

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.



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Objectives

This program will seek to provide professionals with advanced knowledge of bacterial resistance mechanisms and their impact on human and animal health. Therefore, pharmacists will be able to critically evaluate the underlying causes of resistance, implement strategies for rational antibiotic use, and develop preventive and control measures in both clinical and veterinary settings. In addition, an understanding of the One Health approach, integrating human, animal and environmental health, will be fostered to contribute significantly in multidisciplinary teams to combat this global problem.





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The objective of this Postgraduate Diploma in Multidrug-Resistant Bacteria in Human Microbiology and Animal Health will be to prepare pharmacists to effectively address and manage antimicrobial resistance"

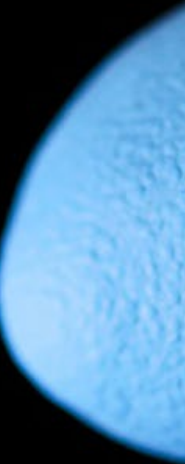


General Objectives

- ♦ Understand how bacterial resistance evolves as new antibiotics are introduced into clinical practice
- ♦ Study the presence of Multidrug-Resistant Bacteria in the environment and wildlife, as well as to understand their potential impact on public health
- ♦ Acquire knowledge on the dissemination of resistant bacteria in food production



You will be prepared to lead infection prevention and control initiatives, promote interdisciplinary research and apply the One Health approach, all thanks to the best teaching materials on the academic market"





Specific Objectives

Module 1. Multidrug-Resistant Bacteria in Human Pathology

- ♦ Evaluate the causes of antibiotic resistance, from the lack of new antibiotics, to socioeconomic factors and health policies
- ♦ Examine the current status of antibiotic resistance in the world, including global statistics and trends in different regions

Module 2. Antimicrobial Resistance in Animal Health

- ♦ Analyze the causes and mechanisms of bacterial resistance in the veterinary field, including the dissemination of antibiotic resistance genes
- ♦ Identify the species of multi-resistant bacteria 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 application in the study and control of Multidrug-Resistant Bacteria

Module 3. Multi-drug Resistant Bacteria in the Food Chain

- ♦ Analyze the role of the food chain in the spread of bacterial resistance to antibiotics through food of animal and plant origin, as well as through water



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Course Management

The faculty is composed of an interdisciplinary team of experts in Microbiology, Parasitology and Veterinary Medicine. In fact, this select group of professionals has extensive academic and clinical experience, as well as a strong background in antimicrobial resistance research. Therefore, pharmacists will benefit from access to up-to-date knowledge and innovative practices taught by leaders in the field, with a comprehensive and practical approach. In addition, these mentors will foster a collaborative and active learning environment, where graduates will be able to develop solutions applicable to their professional practice.



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TECH faculty are involved in cutting-edge projects, which will give you access to the latest research, techniques and innovative approaches to address the problem of Multidrug-Resistant Bacteria"

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. Alegría González, Ángel

- ◆ Researcher and Academician in Food Microbiology and Molecular Genetics of the University of León
- ◆ Researcher in 9 projects funded by public competitive calls
- ◆ Principal Investigator as beneficiary of an Intra-European Marie Curie Fellowship (IEF-FP7) in a project associated to the University of Groningen (The Netherlands)
- ◆ PhD in Food Biotechnology from the University of Oviedo - CSIC
- ◆ Degree in Biology from the University of Oviedo
- ◆ Master's Degree in Food Biotechnology from the University of Oviedo

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)

04

Structure and Content

The university program is divided into 3 main modules: the first one will address Multidrug-Resistant Bacteria in human pathology, from the causes of resistance, to health policies and current global trends. The second will focus on antimicrobial resistance in the veterinary field, analyzing the mechanisms of resistance, the most relevant bacterial species and preventive and control strategies under the One Health perspective. Finally, the third module will examine the role of the food chain in the spread of bacterial resistance.



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This Postgraduate Diploma in Multidrug-Resistant Bacteria in Human Microbiology and Animal Health will provide you with rigorous and specialized content, covering the critical aspects of antimicrobial resistance"

Module 1. Multidrug-Resistant Bacteria in Human Pathology

- 1.1. Mechanisms of Acquired Resistance to Antibiotics
 - 1.1.1. Acquisition of Resistance Genes
 - 1.1.2. Mutations
 - 1.1.3. Acquisition of Plasmids
- 1.2. Mechanisms of Intrinsic Resistance to Antibiotics
 - 1.2.1. Blockage of Antibiotic Entry
 - 1.2.2. Modification of the Antibiotic Target
 - 1.2.3. Inactivation of the Antibiotic
 - 1.2.4. Antibiotic Expulsion
- 1.3. Chronology and Evolution of Antibiotic Resistance
 - 1.3.1. Discovery of Antibiotic Resistance
 - 1.3.2. Plasmids
 - 1.3.3. Evolution of Resistance
 - 1.3.4. Current Trends in the Evolution of Antibiotic Resistance
- 1.4. Antibiotic Resistance in Human Pathology
 - 1.4.1. Increased Mortality and Morbidity
 - 1.4.2. Impact of Resistance on Public Health
 - 1.4.3. Economic Cost Associated with Antibiotic Resistance
- 1.5. Multidrug-Resistant Human Pathogens
 - 1.5.1. Acinetobacter Baumannii
 - 1.5.2. Pseudomonas Aeruginosa
 - 1.5.3. Enterobacteriaceae
 - 1.5.4. Enterococcus Faecium
 - 1.5.5. Staphylococcus Aureus
 - 1.5.6. Helicobacter Pylori
 - 1.5.7. Campylobacter Spp
 - 1.5.8. Salmonellae
 - 1.5.9. Neisseria Gonorrhoeae
 - 1.5.10. Streptococcus Pneumoniae
 - 1.5.11. Hemophilus Influenzae
 - 1.5.12. Shigella Spp
- 1.6. Bacteria Highly Dangerous to Human Health: Update of the WHO List
 - 1.6.1. Critical Priority Pathogens
 - 1.6.2. High Priority Pathogens
 - 1.6.3. Pathogens with Medium Priority
- 1.7. Analysis of the Causes of Antibiotic Resistance
 - 1.7.1. Lack of New Antibiotics
 - 1.7.2. Socioeconomic Factors and Health Policies
 - 1.7.3. Poor Hygiene and Sanitation
 - 1.7.4. Health Policies and Antibiotic Resistance
 - 1.7.5. International Travel and Global Trade
 - 1.7.6. Dispersal of High-Risk Clones
 - 1.7.7. Emerging Pathogens with Resistance to Multiple Antibiotics
- 1.8. Antibiotic Use and Abuse in the Community
 - 1.8.1. Prescription
 - 1.8.2. Acquisition
 - 1.8.3. Misuse of Antibiotics
- 1.9. Current Status of Antibiotic Resistance in the World
 - 1.9.1. Global Statistics
 - 1.9.2. Central and South America
 - 1.9.3. Africa
 - 1.9.4. BORRAR
 - 1.9.5. North America
 - 1.9.6. Asia and Oceania
- 1.10. Perspectives on Antibiotic Resistance
 - 1.10.1. Strategies to Mitigate the Problem of Multidrug-Resistance
 - 1.10.2. International Actions
 - 1.10.3. Actions at the Global Level

Module 2. Antimicrobial Resistance in Animal Health


- 2.1. Antibiotics in the Veterinary Field
 - 2.1.1. Prescription
 - 2.1.2. Acquisition
 - 2.1.3. Misuse of Antibiotics
- 2.2. Multidrug-Resistant Bacteria in the Veterinary Field
 - 2.2.1. Causes of Bacterial Resistance in the Veterinary Field
 - 2.2.2. Dissemination of Antibiotic Resistance Genes (ARGs), Especially through Horizontal Transmission Mediated by Plasmids
 - 2.2.3. Mobile Colistin Resistance Gene (*mcr*)
- 2.3. Multidrug-Resistant Bacterial Species of Veterinary Importance
 - 2.3.1. Pet Pathogens
 - 2.3.2. Cattle Pathogens
 - 2.3.3. Pig Pathogens
 - 2.3.4. Poultry Pathogens
 - 2.3.5. Goat and Sheep Pathogens
 - 2.3.6. Fish and Aquatic Animal Pathogens
- 2.4. Impact of Multi-Resistant Bacteria in Animal Health
 - 2.4.1. Animal Suffering and Losses
 - 2.4.2. Impact on Household Livelihoods
 - 2.4.3. Generation of "Superbugs"
- 2.5. Multidrug-Resistant Bacteria in the Environment and Wildlife
 - 2.5.1. Antibiotic Resistant Bacteria in the Environment
 - 2.5.2. Antibiotic Resistant Bacteria in Wildlife
 - 2.5.3. Antimicrobial Resistant Bacteria in Marine and Inland Waters
- 2.6. Impact of Resistances Detected in Animals and in the Environment on Public Health
 - 2.6.1. Shared Antibiotics in Veterinary Medicine and Human Medicine
 - 2.6.2. Transmission of Resistance from Animals to Humans
 - 2.6.3. Transmission of Resistance from the Environment to Humans

- 2.7. Prevention and Control
 - 2.7.1. Preventive Measures Against Bacterial Resistance in Animals
 - 2.7.2. Systems and Processes for the Effective Use of Antibiotics
 - 2.7.3. Role of Veterinarians and Pet Owners in the Prevention of Bacterial Resistance
 - 2.7.4. Treatments and Alternatives to Antibiotics in Animals
 - 2.7.5. Tools for Limiting the Emergence of Antimicrobial Resistance and its Spread in the Environment
- 2.8. Strategic Plans to Reduce the Risk of Selection and Spread of Antimicrobial Resistance
 - 2.8.1. Monitoring and Surveillance of the Use of Critical Antibiotics
 - 2.8.2. Training and Research
 - 2.8.3. Communication and Prevention
- 2.9. One Health Strategy
 - 2.9.1. Definition and Objectives of the One Health Strategy
 - 2.9.2. Application of the One Health Strategy in the Control of Multidrug-Resistant Bacteria
 - 2.9.3. Success Stories Using the One Health Strategy
- 2.10. Climate Change and Antibiotic Resistance
 - 2.10.1. Increase in Infectious Diseases
 - 2.10.2. Extreme Climatic Conditions
 - 2.10.3. Displacement of Populations

Module 3. Multidrug-Resistant Bacteria in the Food Chain

- 3.1. Multidrug-Resistant Bacteria in the Food Chain
 - 3.1.1. The Role of the Food Chain in the Spread of Antimicrobial Resistance
 - 3.1.2. Antimicrobial Resistances in Food (ESBL, MRSA, and Colistin)
 - 3.1.3. The Food Chain within the One Health Approach
- 3.2. Dissemination of Antimicrobial Resistance through Food
 - 3.2.1. Food of Animal Origin
 - 3.2.2. Food of Plant Origin
 - 3.2.3. Dissemination of Resistant Bacteria through Water
- 3.3. Spread of Resistant Bacteria in Food Production
 - 3.3.1. Spread of Resistant Bacteria in Food Production Environments
 - 3.3.2. Spread of Resistant Bacteria through Food Handlers
 - 3.3.3. Cross-Resistance between Biocides and Antibiotics



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- 3.4. Antimicrobial Resistance in Salmonella Spp
 - 3.4.1. AmpC-, ESBL- and Carbapenemase-Producing Salmonella Spp
 - 3.4.2. Resistant Salmonella Spp in Humans
 - 3.4.3. Antibiotic Resistant Salmonella Spp in Farm and Meat Animals
 - 3.4.4. Multidrug-Resistant Salmonella Spp
 - 3.5. Antimicrobial Resistance in Campylobacter Spp
 - 3.5.1. Antimicrobial Resistance in Campylobacter Spp
 - 3.5.2. Antimicrobial Resistant Campylobacter Spp in Foods
 - 3.5.3. Multidrug-Resistant Campylobacter Spp
 - 3.6. Antimicrobial Resistances in Escherichia Coli
 - 3.6.1. AmpC, ESBL and Carbapenemase Producing E. Coli
 - 3.6.2. Antimicrobial Resistant E. Coli in Farm Animals
 - 3.6.3. Antimicrobial Resistant E. Coli in Food
 - 3.6.4. Multidrug-Resistant E. Coli
 - 3.7. Antimicrobial Resistance in Staphylococci
 - 3.7.1. Methicillin-Resistant S. Aureus (MRSA)
 - 3.7.2. MRSA in Food and Farm Animals
 - 3.7.3. Methicillin-Resistant Staphylococcus Epidermidis (MRSE)
 - 3.7.4. Multidrug-Resistant Staphylococcus Spp
 - 3.8. Antimicrobial Resistance in Enterobacteria
 - 3.8.1. Shigella Spp
 - 3.8.2. Enterobacter Spp
 - 3.8.3. Other Environmental Enterobacteriaceae
 - 3.9. Antimicrobial Resistance in Other Food-Borne Pathogens
 - 3.9.1. Listeria Monocytogenes
 - 3.9.2. Enterococcus Spp
 - 3.9.3. Pseudomonas Spp
 - 3.9.4. Aeromonas Spp and Plesiomonas Spp
 - 3.10. Strategies to Prevent and Control the Spread of Microbial Resistance in the Food Chain
 - 3.10.1. Preventive and Control Measures in Primary Production
 - 3.10.2. Preventive and Control Measures in Slaughterhouses
 - 3.10.3. Preventive and Control Measures in Food Industries

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, students will be confronted with multiple simulated clinical cases based on real patients, in which they will have to investigate, establish hypotheses and ultimately, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Pharmacists learn better, more quickly 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. 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, attempting to recreate the actual conditions in a pharmacist'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. Pharmacists who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their 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.

Our 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, which represent a real revolution with respect to simply studying and analyzing cases.

Pharmacists 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, more than 115,000 pharmacists have been trained with unprecedented success in all clinical specialties, regardless of the surgical load. This pedagogical methodology is developed in a highly demanding environment, with a university student body with a high socioeconomic profile and an average age of 43.5 years.

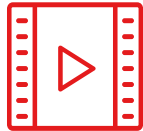
Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

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 created specifically for the course by specialist pharmacists who will be teaching the course, so that the didactic development is highly specific and accurate.

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.



Video Techniques and Procedures

TECH introduces students to the latest techniques, to the latest educational advances, to the forefront of current pharmaceutical care procedures. All of this, first hand, and explained and detailed with precision to contribute to assimilation and a better understanding. And best of all, you can watch them as many times as you want.



Interactive Summaries

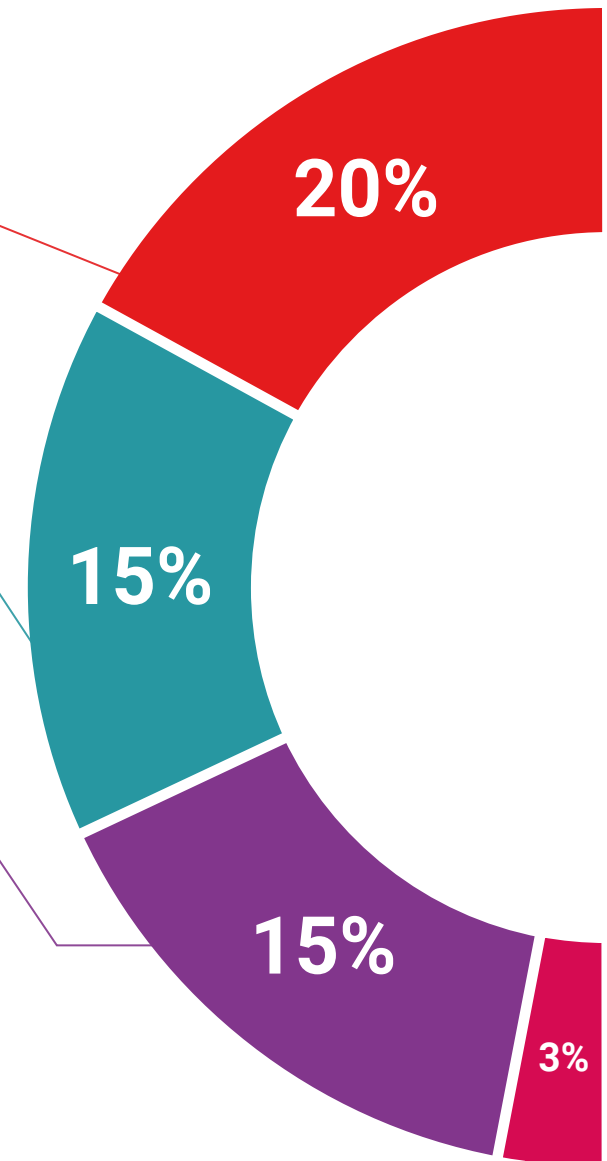
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

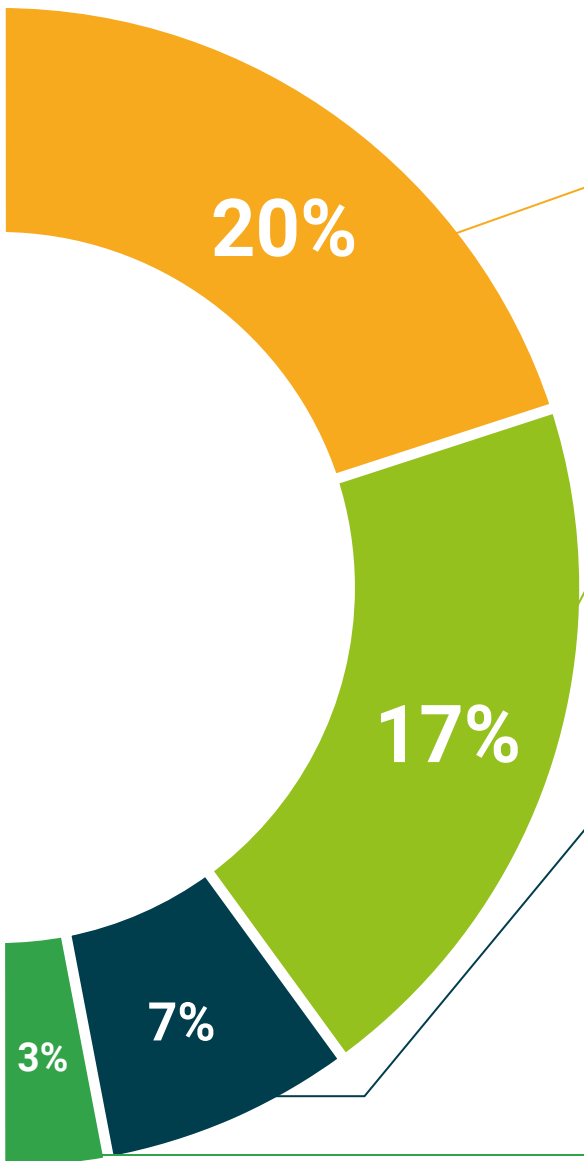
This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".



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, we will present you with real case developments in which the expert will guide you through 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 Diploma in Multidrug-Resistant Bacteria in Human Microbiology and 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 private qualification will allow you to obtain a **Postgraduate Diploma in Multidrug-Resistant Bacteria in Human Microbiology and 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.

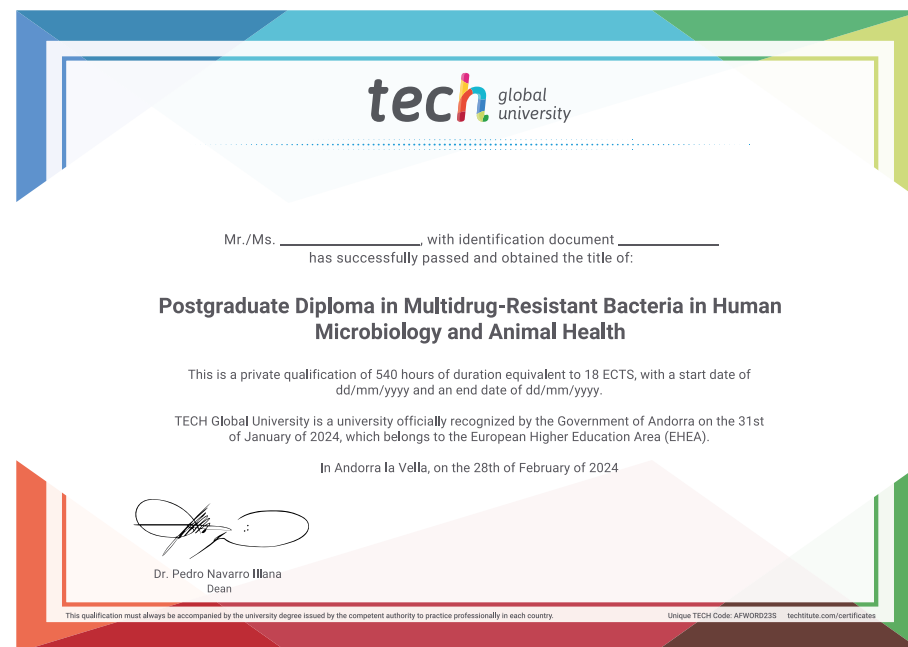
This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

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