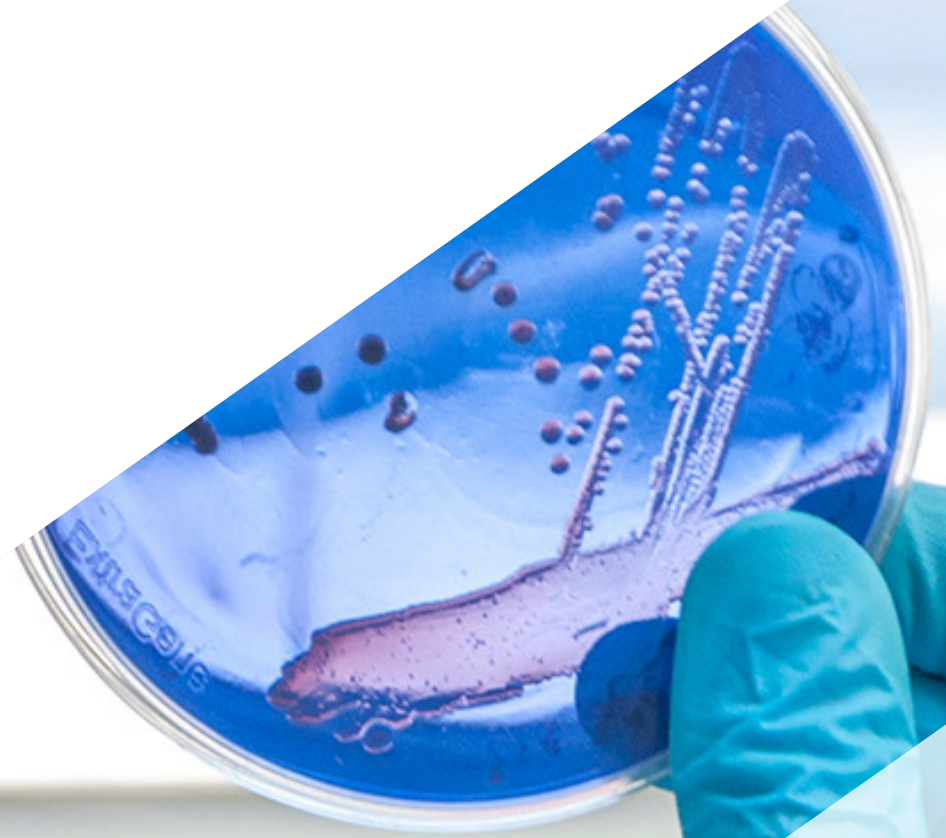


# Postgraduate Certificate

## Multidrug-Resistant Bacteria in the Food Chain for Nursing





## Postgraduate Certificate Multidrug-Resistant Bacteria in the Food Chain 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/multidrug-resistant-bacteria-food-chain-nursing](http://www.techtute.com/us/nursing/postgraduate-certificate/multidrug-resistant-bacteria-food-chain-nursing)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

---

*p. 20*

06

Certificate

---

*p. 28*

# 01

# Introduction

Antimicrobial resistance represents one of the greatest global challenges in Public Health, affecting both healthcare and food safety. In this context, Multidrug-Resistant Bacteria in the food chain have emerged as a growing concern due to their ability to be transmitted through contaminated food and their impact on human health. Given this, nurses play a crucial role in the prevention and control of infections related to these pathogens. Therefore, it is essential that these professionals remain at the forefront of the most cutting-edge techniques to combat these microorganisms in an optimal way. To help them with this task, TECH launches a pioneering online program focused on innovations in this field.



“

*Thanks to this 100% online Postgraduate Certificate, you will apply the most innovative infection prevention measures and reduce bacterial contamination in the Food Chain”*

The Food Chain plays a fundamental role in the transmission of Multidrug-Resistant Bacteria, challenging public health on a global scale. In this scenario, nurses have become an indispensable element in combating this threat by applying advanced infection management strategies and promoting safe practices in both food handling and consumption. To optimize their clinical outcomes, these professionals need to incorporate into their practice the most advanced strategies to mitigate the risk of transmission of microorganisms.

In this scenario, TECH presents a revolutionary Postgraduate Certificate in Multidrug-Resistant Bacteria in the Food Chain for Nursing. Designed by experts in this field, the academic itinerary will delve into the different antimicrobial resistances in food (among which ESBL, MRSA or colistin stand out). During the course of the program, graduates will acquire the innovative One Health approach, which will enable them to approach antimicrobial resistance from a holistic perspective. In addition, the study plan will provide nurses with the most effective strategies to prevent and control the spread of microbial resistance in the Food Chain.

It should be noted that the approach of this program reinforces its innovative character. In this line, TECH offers a 100% online educational environment, tailored to the needs of busy nurses looking to advance their careers. Through the Relearning methodology, based on the repetition of key concepts to fix knowledge and facilitate learning, flexibility is combined with a robust pedagogical approach. In addition, graduates will have access to an extensive library of innovative multimedia resources that will allow them to enjoy an enjoyable and dynamic refresher course. The only thing professionals will need is an electronic device with Internet access to enter the Virtual Campus and embark on an experience that will significantly broaden their work horizons.

This **Postgraduate Certificate in Multidrug-Resistant Bacteria in the Food Chain 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



*The current importance of Multi-Resistant Bacteria in the Food Chain makes this program a safe bet”*

“

*You will delve into the Dissemination of Resistant Bacteria through Water and implement effective prevention measures in clinical settings”*

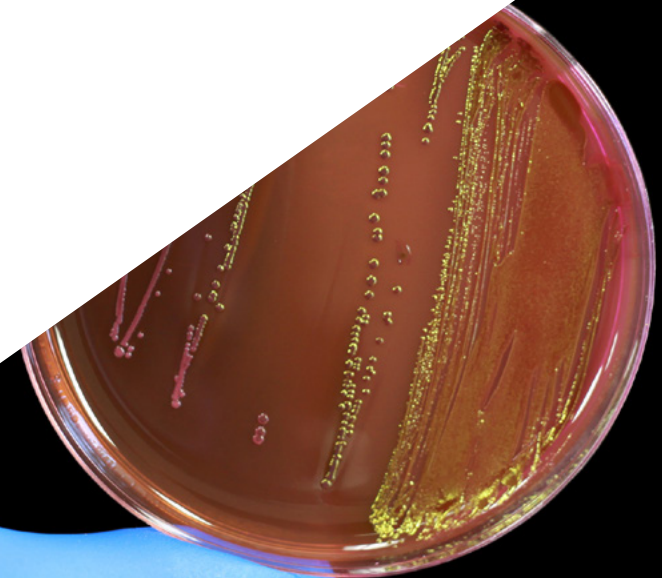
The program's teaching staff includes professionals from the sector who contribute their work experience to this specializing program, as well as renowned specialists from leading societies and prestigious universities.

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.

*Do you want to delve into the genetic and biochemical mechanisms that allow bacteria to develop resistance to antibiotics? Get it with this program.*

*Take advantage of all the benefits of TECH's Relearning methodology, which will allow you to organize your time and study pace.*



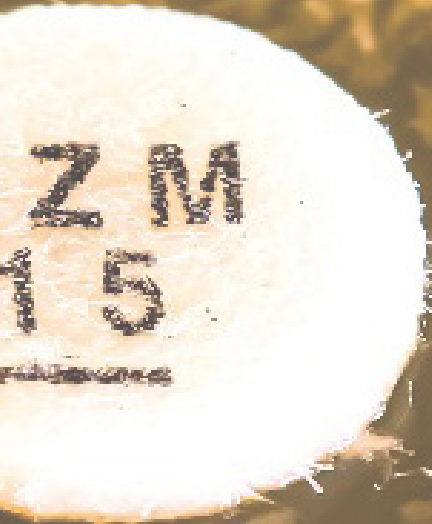
# 02

## Objectives

Upon completion of this Postgraduate Certificate, nurses will be highly qualified to identify the most common Multidrug-Resistant Bacteria in food and their potential to cause nutrient-borne diseases. In this same line, graduates will manage epidemiological surveillance systems to promote early detection and management of outbreaks related to these microorganisms. In addition, professionals will acquire skills to promote safe food practices that reduce the risk of exposure to Multidrug-Resistant Bacteria.







“

*You will master the most sophisticated techniques to prevent bacterial contamination in the food chain, including quality control strategies”*



## General Objectives

---

- ◆ 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





## Specific Objectives

---

- 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
- Gain specialized knowledge on Artificial Intelligence (AI) in Microbiology, including current expectations, emerging areas and its cross-cutting nature



*You will have clinical case studies that will enhance your skills in the management of patients affected by Multidrug-Resistant Bacteria in the Food Chain”*

# 03

# Course Management

TECH's main objective is to provide the most complete and renewed university programs in the academic market. For this reason, it carries out a meticulous process to shape its various teaching staffs. Thanks to this effort, this Postgraduate Certificate has the collaboration of distinguished experts in Multidrug-Resistant Bacteria in the Food Chain. These professionals have developed a myriad of teaching materials, which are characterized by their high quality. In this way, nurses will be immersed in an intensive experience that will significantly optimize their clinical practice.



“

*You will be supported by a faculty of distinguished professionals in the field of Multidrug-Resistant Bacteria in the Food Chain”*

## 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 at 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



# 04

## Structure and Content

Through this university program, nurses will have a thorough understanding of the epidemiology of Multidrug-Resistant Bacteria in the Food Chain. To this end, the syllabus will analyze the role of food in the spread of antimicrobial resistance. In line with this, the syllabus will delve into the One Health approach, which will enable graduates to detect antimicrobial resistance at an early stage. In addition, the program will provide professionals with the most innovative strategies to prevent and control the spread of microbial resistance in the food chain.







“

*You will be able to recognize the most common Multidrug-Resistant Bacteria in food and their potential to cause diseases”*

## Module 1. Multidrug-Resistant Bacteria in the Food Chain

- 1.1. Multidrug-Resistant Bacteria in the Food Chain
  - 1.1.1. The Role of the Food Chain in the Spread of Antimicrobial Resistance
  - 1.1.2. Antimicrobial Resistances in Food (ESBL, MRSA, and Colistin)
  - 1.1.3. The Food Chain within the One Health Approach
- 1.2. Dissemination of Antimicrobial Resistance through Food
  - 1.2.1. Food of Animal Origin
  - 1.2.2. Food of Plant Origin
  - 1.2.3. Spread of Resistant Bacteria through Water
- 1.3. Spread of Resistant Bacteria in Food Production
  - 1.3.1. Spread of Resistant Bacteria in Food Production Environments
  - 1.3.2. Spread of Resistant Bacteria through Food Handlers
  - 1.3.3. Cross-Resistance between Biocides and Antibiotics
- 1.4. Antimicrobial Resistance in Salmonella Spp
  - 1.4.1. Salmonella Spp. Producing AmpC, ESBL and Carbapenemases
  - 1.4.2. Resistant Salmonella Spp in Humans
  - 1.4.3. Antimicrobial Resistant Salmonella Spp. in Farm and Meat Animals
  - 1.4.4. Multidrug-Resistant Salmonella spp
- 1.5. Antimicrobial Resistance in Campylobacter Spp
  - 1.5.1. Antimicrobial Resistance in Campylobacter Spp
  - 1.5.2. Antimicrobial Resistant Campylobacter Spp in Foods
  - 1.5.3. Multidrug-Resistant Campylobacter Spp
- 1.6. Antimicrobial Resistances in Escherichia Coli
  - 1.6.1. AmpC, ESBL and Carbapenemase Producing E. Coli
  - 1.6.2. Antimicrobial Resistant E. Coli in Farm Animals
  - 1.6.3. Antimicrobial Resistant E. Coli in Food
  - 1.6.4. Multidrug-Resistant E. Coli
- 1.7. Antimicrobial Resistance in Staphylococci
  - 1.7.1. Methicillin-Resistant S. Aureus (MRSA)
  - 1.7.2. MRSA in Food and Farm Animals
  - 1.7.3. Methicillin-Resistant Staphylococcus Epidermidis (MRSE)
  - 1.7.4. Multidrug-Resistant Staphylococcus Spp





- 1.8. Antimicrobial Resistance in Enterobacteria
  - 1.8.1. Shigella Spp
  - 1.8.2. Enterobacter Spp
  - 1.8.3. Other Environmental Enterobacteriaceae
- 1.9. Antimicrobial Resistance in Other Food-Borne Pathogens
  - 1.9.1. Listeria Monocytogenes
  - 1.9.2. Enterococcus Spp
  - 1.9.3. Pseudomonas Spp
  - 1.9.4. Aeromonas Spp and Plesiomonas Spp
- 1.10. Strategies to Prevent and Control the Spread of Microbial Resistance in the Food Chain
  - 1.10.1. Preventive and Control Measures in Primary Production
  - 1.10.2. Preventive and Control Measures in Slaughterhouses
  - 1.10.3. Preventive and Control Measures in Food Industries

“

*Updating your knowledge on Multidrug-Resistant Bacteria in the Food Chain will be easier with the multimedia contents you will find in the Virtual Campus. 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.



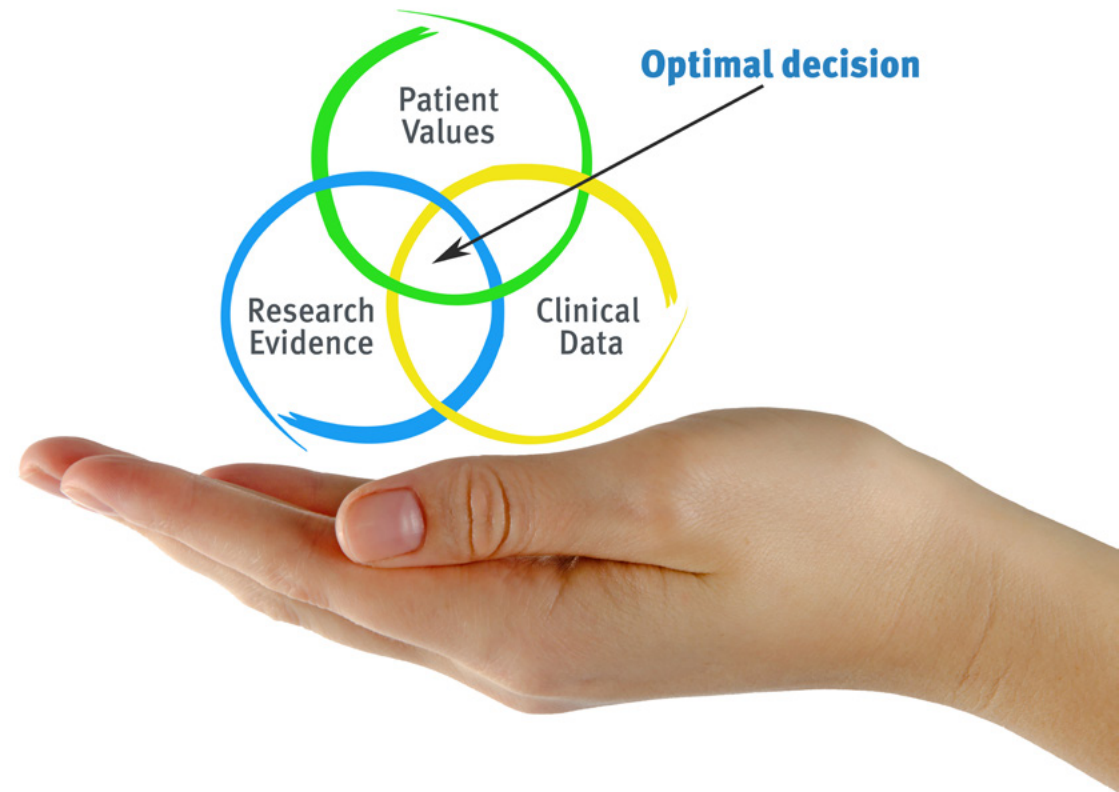
“

*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 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.

“

*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.

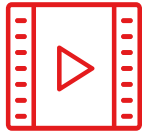
*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

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

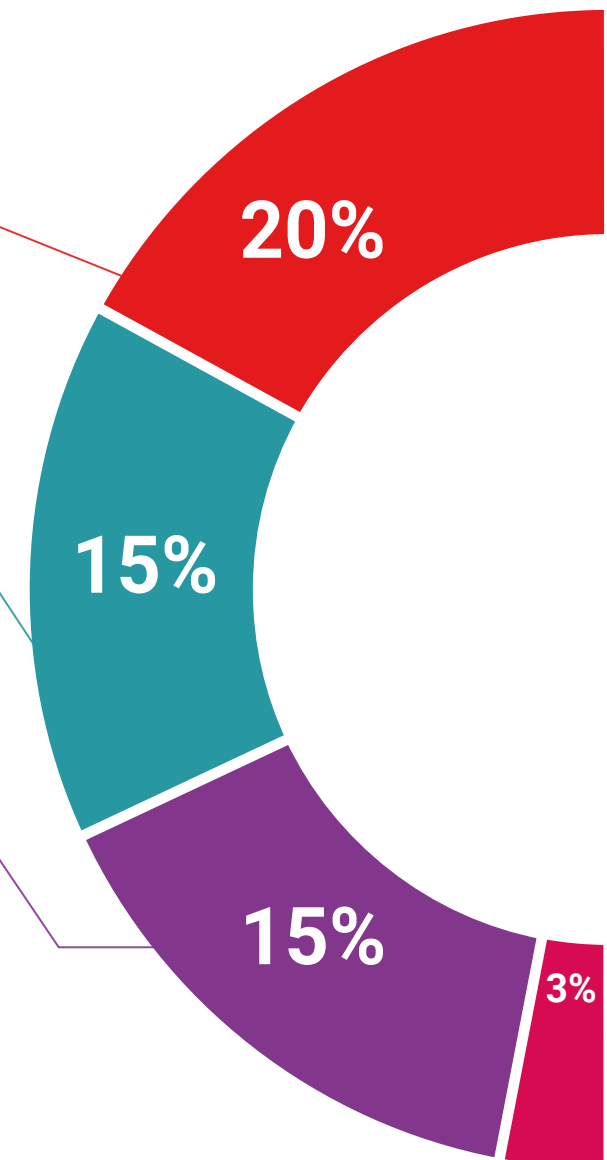
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

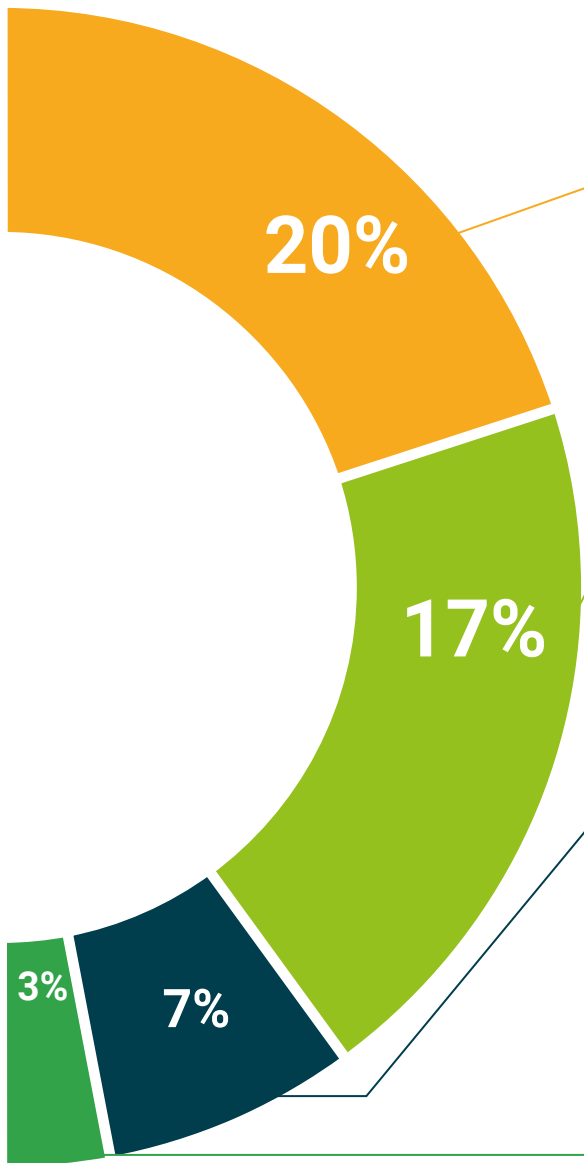
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



### 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 Multidrug-Resistant Bacteria in the Food Chain 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.





“

*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 Multidrug-Resistant Bacteria in the Food Chain 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 Multidrug-Resistant Bacteria in the Food Chain for Nursing**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development language  
classroom



## Postgraduate Certificate Multidrug-Resistant Bacteria in the Food Chain for Nursing

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

# Postgraduate Certificate

## Multidrug-Resistant Bacteria in the Food Chain for Nursing