

Postgraduate Certificate

Emerging Strategies to Address Multidrug-Resistant Bacteria for Nursing





Postgraduate Certificate Emerging Strategies to Address Multidrug-Resistant Bacteria 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/emerging-strategies-address-multidrug-resistant-bacteria-nursing

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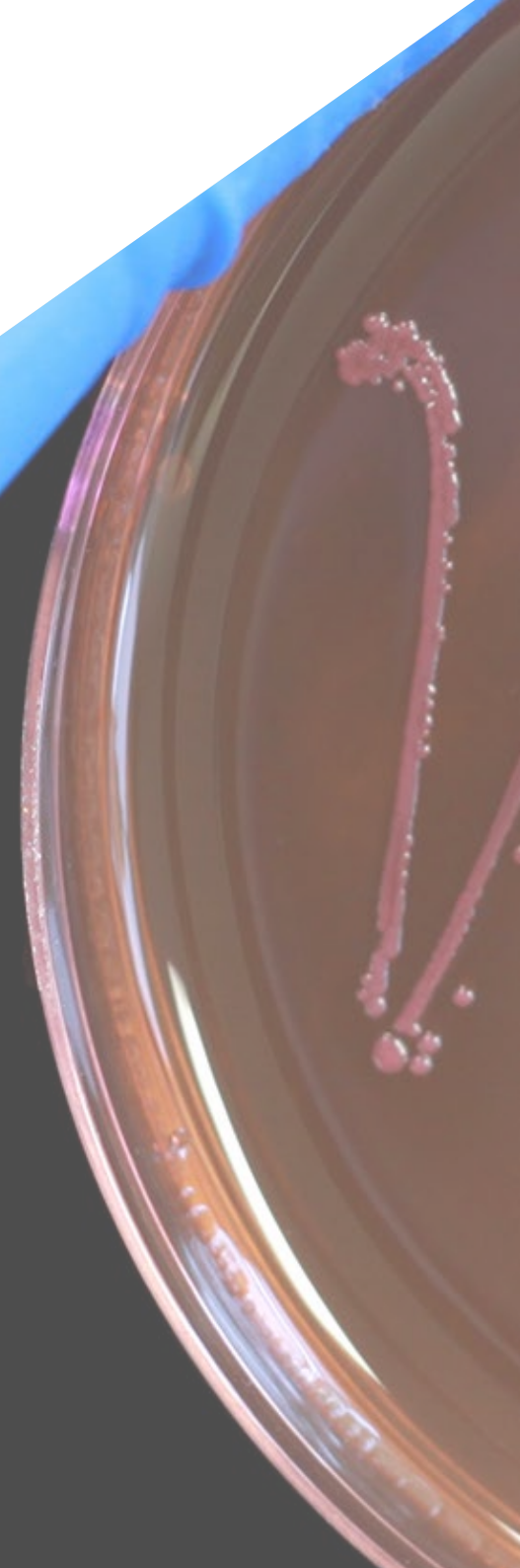
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01

Introduction

Antimicrobial resistance is considered one of the main threats to global health, with alarming projections of causing 10 million deaths annually in the coming years if effective measures are not taken. In the face of this, nurses have a responsibility to promote emerging strategies ranging from new antimicrobial formulations to innovative biological therapies such as Bacteriophages. In order to improve the quality of their care, these experts need to remain at the forefront of the most cutting-edge techniques in this field. To facilitate this task, TECH implements a pioneering university program dedicated to Emerging Strategies to Combat Multidrug-Resistant Bacteria. In addition, it is taught in a convenient 100% online format.



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Through this 100% online Postgraduate Certificate, you will design and implement the most effective infection prevention protocols in clinical settings"

The proliferation of multidrug-resistant bacteria represents a critical challenge for healthcare systems worldwide, given the increasing incidence of hospital infections caused by these microorganisms. Faced with this situation, Nursing professionals play an important role in the application of techniques to combat these organisms.

An example of this is Bacteriophages, which specifically destroy pathogenic bacteria without affecting human cells. For this reason, it is essential that nurses have a solid knowledge of the most innovative procedures to reduce the transmission of resistant infections and improve patient outcomes.

In this framework, TECH presents a revolutionary Postgraduate Certificate on Emerging Strategies to Address Multidrug-Resistant Bacteria for Nursing. Designed by experts in this field, the academic itinerary will delve into CRISPR-Cas9 gene editing, addressing key factors such as the molecular mechanism of action. Likewise, the syllabus will delve into how Temporary Collateral Sensitization reduces the appearance of resistance by making it difficult for bacteria to develop simultaneous resistance to multiple antibiotics. In addition, the program will analyze the different types of vaccines against diseases caused by bacteria. In relation to this, graduates will develop competencies to handle the most sophisticated bioinformatics tools for the fight against Multidrug-Resistant Bacteria.

In terms of methodology, this program is delivered completely online, providing nurses with the flexibility to adapt to their schedules. In addition, the Relearning system, based on the repetition of key concepts to fix the knowledge, will facilitate an effective and rigorous update. This combination of accessibility and innovative pedagogical approach will ensure that participants acquire practical skills to excel in the field of Maxillofacial Forensic Radiology. The only requirement is that graduates have an electronic device with Internet connection, in order to immerse themselves in the Virtual Campus and enjoy the most dynamic educational resources on the market.

This **Postgraduate Certificate in Emerging Strategies to Address Multidrug-Resistant Bacteria 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



No rigid schedules or evaluative timelines. That's what this TECH university program is like!"



Do you want to develop skills to evaluate Public Health projects aimed at combating Antimicrobial Resistance? Get it with this program in just 180 hours!"

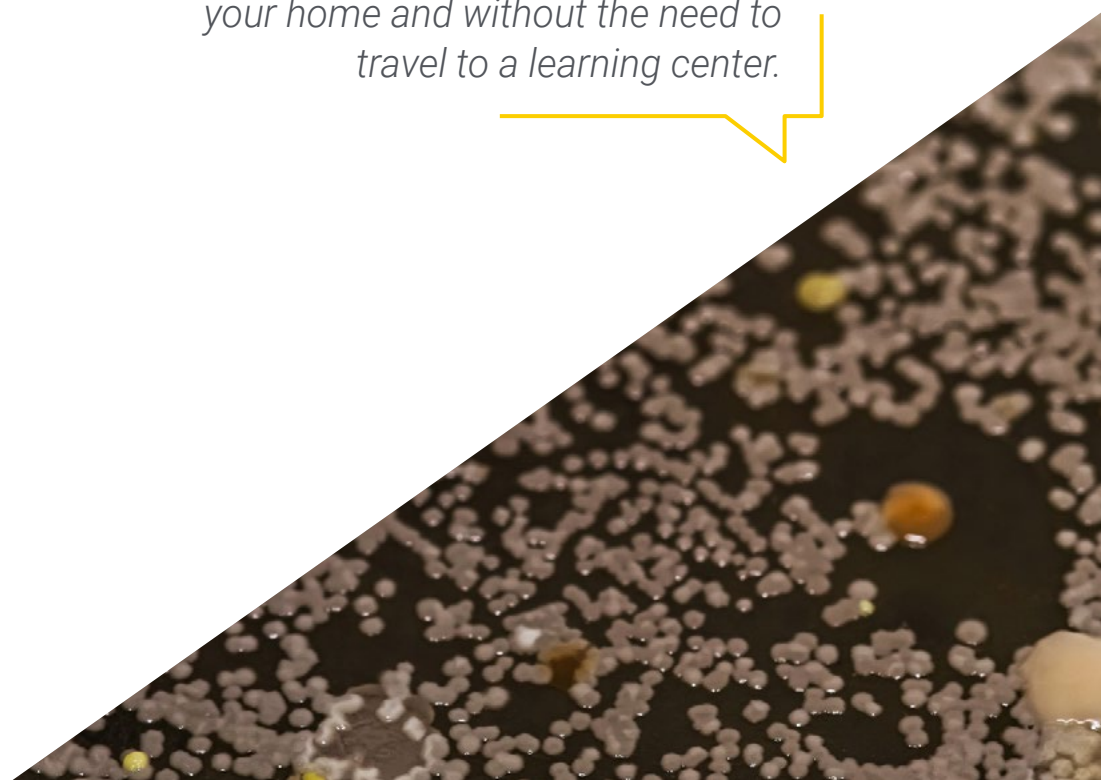
The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

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.

You will learn how Bacteriophages can be used as an alternative to antibiotics to treat infections caused by Multidrug-Resistant Bacteria.

With the Relearning methodology you will be able to study all the contents of this program from the comfort of your home and without the need to travel to a learning center.



02

Objectives

After completing this Postgraduate Certificate, nursing personnel will stand out for their deep understanding of the resistance mechanisms of Multidrug-Resistant Bacteria that affect human health. At the same time, professionals will develop effective clinical management strategies for infected patients, including the appropriate use of antibiotics. In this sense, graduates will be qualified to carry out epidemiological surveillance programs to monitor the prevalence and distribution of Multidrug-Resistant Bacteria.

In addition, the Nursing staff will conduct education and awareness campaigns on the appropriate use of antibiotics.





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You will apply the most effective infection control measures and prevent the spread of Multidrug-Resistant Bacteria in health care settings”



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
- ♦ 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 Objective

- Examine in depth the mechanism of different molecular techniques for use against multiresistant bacteria, including CRISPR-Cas9 gene editing, its molecular mechanism of action and its potential applications

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Specialized readings will allow you to further extend the thorough information provided in this academic proposal”

03

Course Management

This Postgraduate Certificate is supported by highly specialized professionals in Emerging Strategies to Address Multidrug-Resistant Bacteria who have worked in prestigious health institutions. In this way, they have contributed to optimize the quality of life of numerous patients. These specialists have elaborated multiple didactic contents that stand out for their full applicability to the requirements of today's labor market. This is an endorsement for the nurses, as they will gain access to a high experience that will optimize their daily practice to a great extent.





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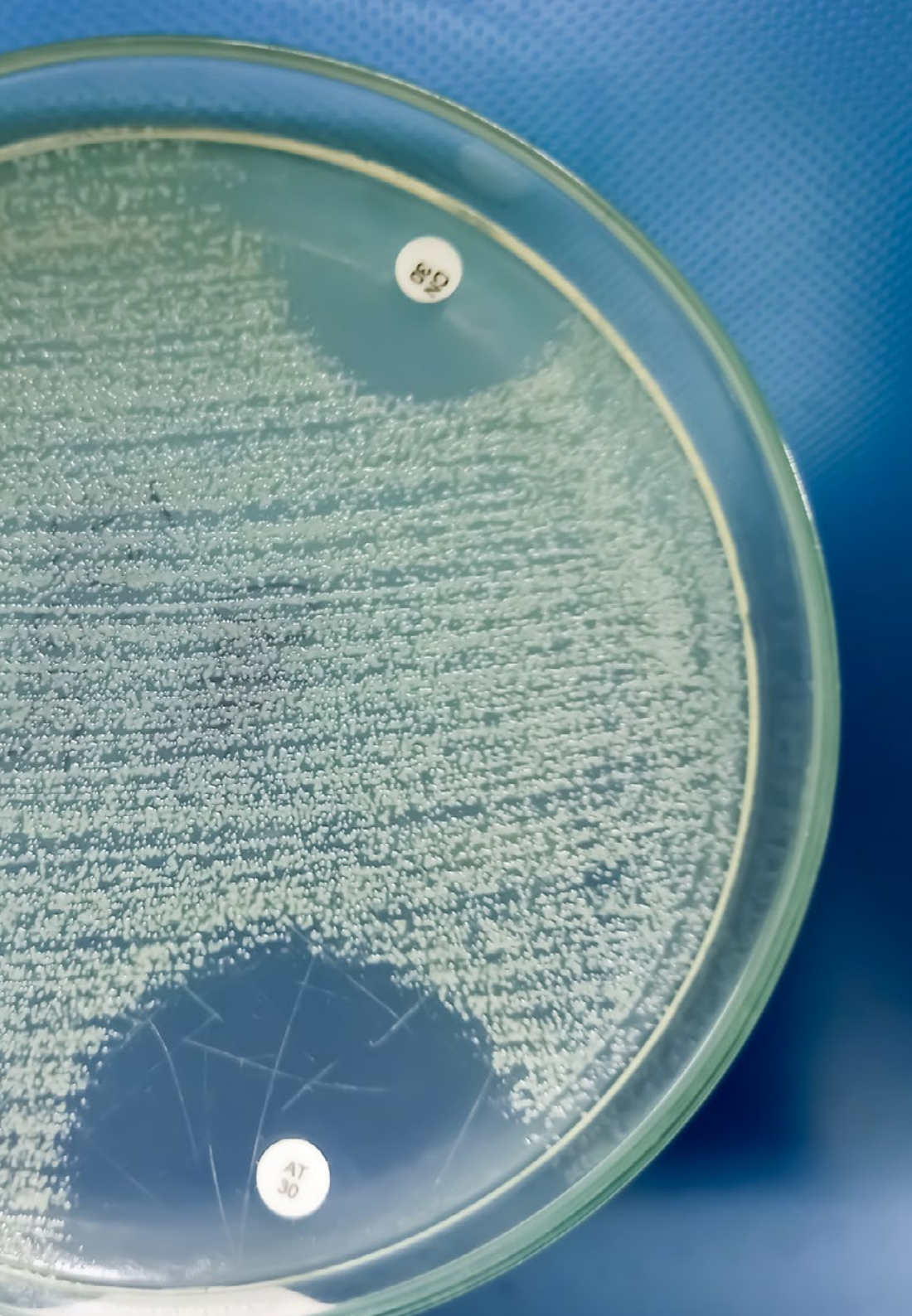
The teachers of this Postgraduate Certificate will provide you with the most sophisticated techniques to prevent nosocomial infections”

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. Ocaña Fuentes, Aurelio

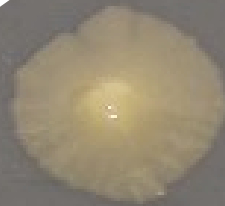
- ◆ Director of the Banco Santander-Universidad Europea del Atlántico Chair in Innovation
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04

Structure and Content

Through this university program, nurses will have a comprehensive understanding of Multidrug-Resistant Bacteria and their impact on Public Health.

The syllabus will further explore CRISPR-Cas9 gene editing, which will enable graduates to implement gene therapies to treat diseases such as Sickle Cell Disease. The syllabus will also examine aspects ranging from the engineering of probiotic bacteria or antibacterial vaccines to phage therapy. In this way, professionals will obtain advanced competencies to develop effective clinical management strategies for infected patients.



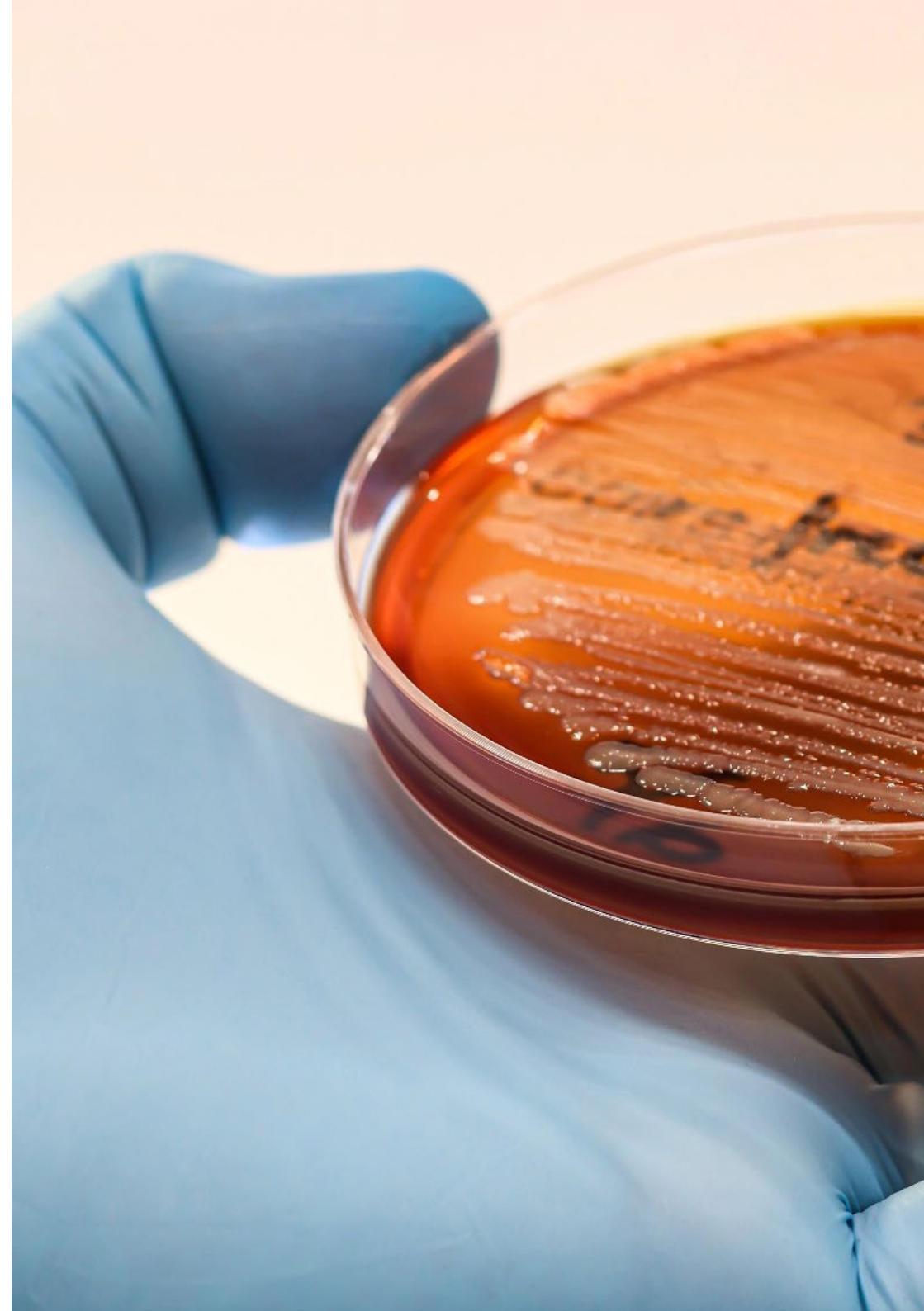


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You will be able to identify and differentiate between the most common Multidrug-Resistant Bacteria, such as Staphylococcus aureus”

Module 1. Emerging Strategies for Multidrug-Resistant Bacteria

- 1.1. CRISPR-Cas9 Gene Editing
 - 1.1.1. Molecular Mechanism of Action
 - 1.1.2. Applications
 - 1.1.2.1. CRISPR-Cas9 as a Therapeutic Tool
 - 1.1.2.2. Engineering of Probiotic Bacteria
 - 1.1.2.3. Rapid Detection of Resistance
 - 1.1.2.4. Elimination of Resistance Plasmids
 - 1.1.2.5. Development of New Antibiotics
 - 1.1.2.6. Safety and Stability
 - 1.1.3. Limitations and Challenges
- 1.2. Temporary Collateral Sensitization (SCT)
 - 1.2.1. Molecular Mechanism
 - 1.2.2. Advantages and Applications of SCT
 - 1.2.3. Limitations and Challenges
- 1.3. Gene Silencing
 - 1.3.1. Molecular Mechanism
 - 1.3.2. RNA Interference
 - 1.3.3. Antisense Oligonucleotides
 - 1.3.4. Benefits and Applications of Gene Silencing
 - 1.3.5. Limitations
- 1.4. High-Throughput Sequencing
 - 1.4.1. Stages of High-Throughput Sequencing
 - 1.4.2. Bioinformatics Tools for Combating Multidrug-Resistant Bacteria
 - 1.4.3. Challenges
- 1.5. Nanoparticles
 - 1.5.1. Mechanisms of Action against Bacteria
 - 1.5.2. Clinical Applications
 - 1.5.3. Limitations and Challenges





- 1.6. Engineering of Probiotic Bacteria
 - 1.6.1. Production of Antimicrobial Molecules
 - 1.6.2. Bacterial Antagonism
 - 1.6.3. Modulation of the Immune System
 - 1.6.4. Clinical Applications
 - 1.6.4.1. Prevention of Nosocomial Infections
 - 1.6.4.2. Reducing the Incidence of Respiratory Infections
 - 1.6.4.3. Adjunctive Therapy in the Treatment of Urinary Tract Infections
 - 1.6.4.4. Prevention of Resistant Skin Infections
 - 1.6.5. Limitations and Challenges
- 1.7. Antibacterial Vaccines
 - 1.7.1. Types of Vaccines against Diseases Caused by Bacteria
 - 1.7.2. Vaccines in Development against Major Multidrug-Resistant Bacteria
 - 1.7.3. Challenges and Considerations
- 1.8. Bacteriophages
 - 1.8.1. Mechanism of Action
 - 1.8.2. Lytic Cycle of Bacteriophages
 - 1.8.3. Lysogenic Cycle of Bacteriophages
- 1.9. Phage Therapy
 - 1.9.1. Isolation and Transport of Bacteriophages
 - 1.9.2. Purification and Handling of Bacteriophages in the Laboratory
 - 1.9.3. Phenotypic and Genetic Characterisation of Bacteriophages
 - 1.9.4. Preclinical and Clinical Trials
 - 1.9.5. Compassionate Use of Phages and Success Stories
- 1.10. Antibiotic Combination Therapy
 - 1.10.1. Mechanisms of Action
 - 1.10.2. Efficacy and Risks
 - 1.10.3. Challenges and Constraints
 - 1.10.4. Combined Antibiotic and Phage Therapy

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. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, in an attempt to recreate the 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 specialities 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

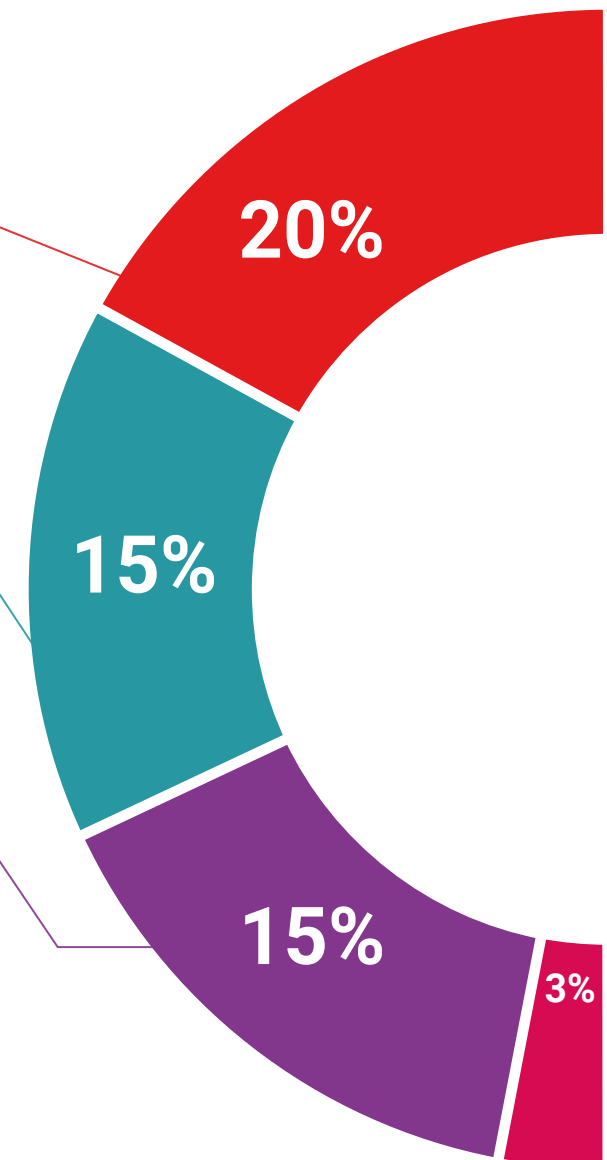
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

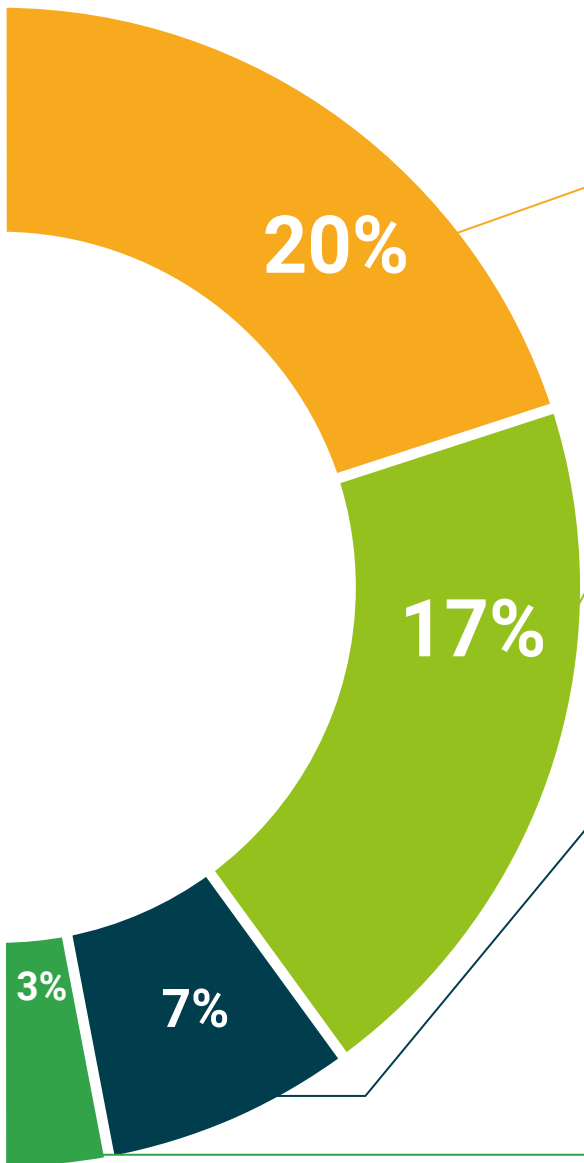
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



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 Emerging Strategies to Address Multidrug-Resistant Bacteria for Nursing guarantees, in addition to the most accurate 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 Emerging Strategies to Address Multidrug-Resistant Bacteria 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 Emerging Strategies to Address Multidrug-Resistant Bacteria for Nursing**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





Postgraduate Certificate
Emerging Strategies to
Address Multidrug-Resistant
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- » Modality: **online**
- » Duration: **6 weeks**
- » Certificate: **TECH Global University**
- » Accreditation: **6 ECTS**
- » Schedule: **at your own pace**
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Postgraduate Certificate

Emerging Strategies to Address Multidrug-Resistant Bacteria for Nursing

