



Postgraduate Diploma Clinical Management of Multidrug-Resistant Bacteria

» Modality: online

» Duration: 6 months

» Certificate: TECH Global University

» Accreditation: 18 ECTS

» Schedule: at your own pace

» Exams: online

Website: www.techtitute.com/us/pharmacy/postgraduate-diploma/postgraduate-diploma-clinical-management-multidrug-resistant-bacteria

Index

> 06 Certificate

> > p. 30

01 Introduction

Multidrug-resistant bacteria, which have developed resistance to multiple antibiotics, significantly complicate the treatment of common and serious infections. Therefore, therapeutic approaches include the use of antimicrobial agents of last resort, such as colistin and tigecycline, as well as stringent infection control strategies to prevent hospital spread. In addition, continued research into new antimicrobials and alternative therapies is crucial to address this emerging threat to global public health. In this situation, TECH has developed a complete program that is conducted entirely online, with total flexibility and adaptability according to the individual needs of the students, avoiding inconveniences such as traveling to a physical center or adjusting to a pre-established schedule. In addition, it is based on the innovative educational methodology called Relearning.



tech 06 | Introduction

With the alarming increase in bacterial strains exhibiting resistance to multiple antibiotics, treatment protocols have evolved toward more personalized and rigorous approaches. Strategies such as the use of antibiotics of last resort, combination therapies and the strict implementation of infection control measures are essential to combat this emerging problem.

This Postgraduate Diploma will focus on the management of patients in Intensive Care Units (ICU) affected by infections caused by Multidrug-Resistant Bacteria. In this sense, pharmacists will acquire specialized knowledge in the effective treatment of these critical infections, as well as advanced skills in the prevention of their spread within the hospital environment.

Likewise, the agenda will focus on Multidrug-Resistant Gram Negative Bacteria, addressing the selection of appropriate empirical antibiotic therapies against these infections, which represent a growing challenge in clinical practice. Essential strategies for implementing Antimicrobial Stewardship Optimization Programs (PROs) will also be analyzed, which are essential to effectively manage these complex infections and reduce the development of resistance.

Finally, the critical implications of antibiotic resistance in Gram Positive Bacteria such as Streptococcus, Enterococcus and Staphylococcus for both Public Health and daily clinical practice will be examined. In addition, innovative strategies to mitigate the impact of antimicrobial resistance, including the rational use of antimicrobials and the development of new therapeutic modalities.

These detailed materials will provide graduates with a fully online methodology, allowing them to adjust their study schedule according to their personal and professional commitments. In addition, the innovative

Relearning system will be integrated, which facilitates the intensive assimilation of key concepts through strategic repetitions. In this way, graduates will be able to learn at their own pace and achieve mastery

at their own pace and achieve a complete mastery of the latest scientific evidence.

This **Postgraduate Diploma in Clinical Management of Multidrug-Resistant Bacteria** 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 be equipped with the skills to address current and future challenges associated with Gram Positive Resistant Bacteria, therefore strengthening your ability to provide high quality clinical care"



You will be immersed in implementing rational antibiotic use policies, promoting infection prevention measures, and fostering ongoing research into new antimicrobial agents"

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.

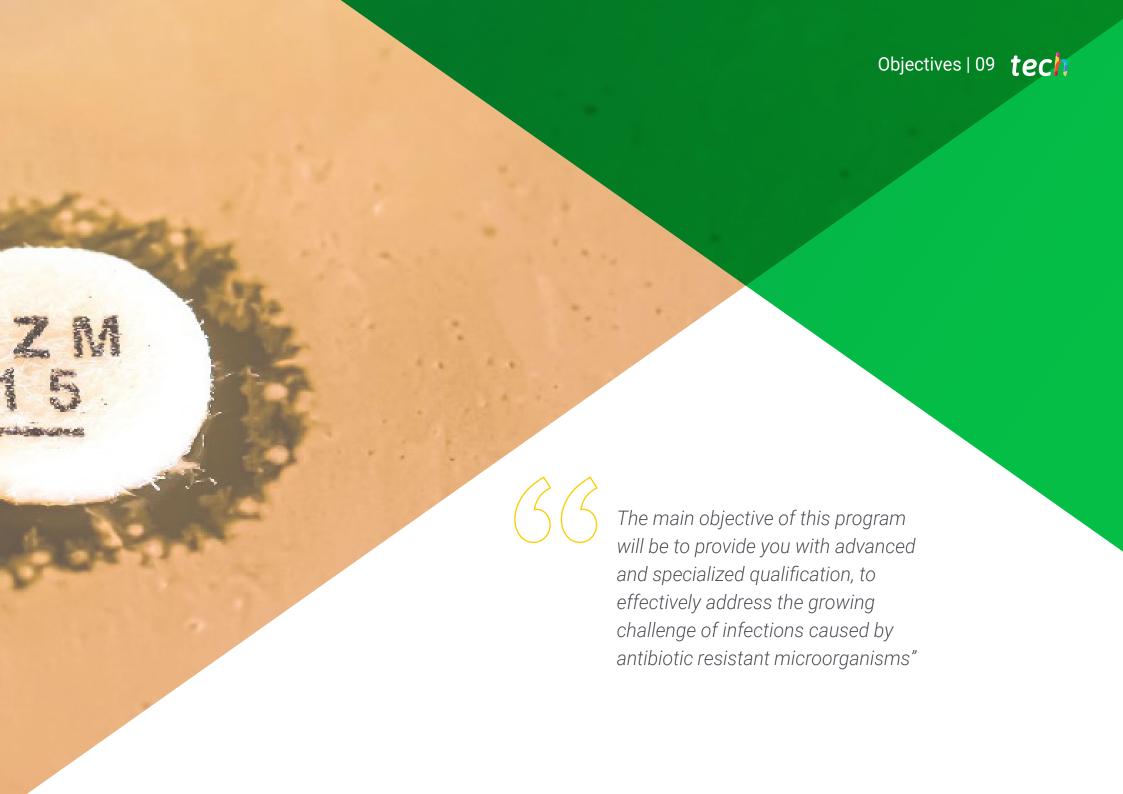
The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

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, the student will be assisted by an innovative interactive video system created by renowned and experienced experts

You will deal with the selection of the appropriate empirical antibiotic treatments when faced with the suspicion of Multi-drug Resistant Gram Negative Bacteria, through the best didactic materials, at the forefront of education and technology.







tech 10 | Objectives



General Objectives

- 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



You will develop competencies for implementing antimicrobial optimization strategies and adopting robust preventive measures, thanks to a comprehensive library of multimedia resources"



Specific Objectives

Module 1. Management of Patients with Multidrug-Resistant Bacterial Infections in Intensive Care Units (ICU)

- Acquire specialized knowledge on the diagnosis and treatment of common infections in ICUs
- Develop skills for the prevention of Multiresistant Bacterial Infections in the ICU

Module 2. Multidrug-Resistant Gram Negative Bacteria

- Select the appropriate empirical antibiotic treatment for suspected infections with Multidrug-resistant Gram-negative Microorganisms
- Determine the importance of PROA (Program for Optimization of Antimicrobial Agents) teams in infections by Multidrug-resistant Gram-negative Microorganisms

Module 3. Antibiotic Resistance in Streptococcus, Enterococcus and Staphylococcus

- Explore the implications of antibiotic resistance of the major Gram Positive Bacteria on Public Health and clinical practice
- Discuss strategies to mitigate antibiotic resistance in Gram Positive Bacteria







tech 14 | Course Management

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. Domenech Lucas, Mirian

- Researcher at the Spanish Reference Laboratory for Pneumococci, National Centre of Microbiology
- Researcher in International Groups led from College London, UK and Radboud University in the Netherlands
- Academician of the Department of Genetics, Physiology and Microbiology of UCM
- PhD in Biology from the Complutense University of Madrid
- Degree in Biology, specializing in Biotechnology from UCM
- Diploma of Advanced Studies, UCM

Dr. Suberviola Cañas, Borja

- Assistant Physician of the Intensive Care Medicine Service at the Marqués de Valdecilla University Hospital
- Principal Investigator and Collaborating Researcher in 6 projects with competitive funding
- Doctor in Medicine by the University of Cantabria
- Specialty in Intensive Care Medicine and Resuscitation at the Marqués de Valdecilla University Hospital in Santander
- Degree in Medicine from the University of the Basque Country
- Master's Degree in Infectious Diseases in the Critically III Patient from the University of Valencia
- Member and Vice-coordinator of the Working Group on Infectious Diseases and Sepsis (GTEIS) of the Spanish Society of Intensive Care Medicine, Critical Care and Coronary Units (SEMICYUC)
- Member of the Group of Infectious Diseases in the Critical Patient of the Spanish Society of Infectious Diseases and Clinical Microbiology (SEIMC)

Dr. Armiñanzas Castillo, Carlos

- FEA at the University Hospital Marqués de Valdecilla, Cantabria
- Researcher at the Valdecilla Research Institute (IDIVAL), Cantabria
- Doctor in Medicine by the University of Cantabria
- Master's Degree in Human Immunodeficiency Virus Infection by the Rey Juan Carlos University
- Master's Degree in Graphic Medicine from the International University of Andalusia
 Degree in Medicine from the University of Cantabria
- Member of: Centre for Biomedical Research in the Infectious Diseases Network CIBERINFEC (MICINN-ISCIII) and Society of Infectious Diseases and Clinical Microbiology (SEIMC)



Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"





tech 18 | Structure and Content

Module 1. Management of Patients with Multidrug-Resistant Bacterial Infections in Intensive Care Units (ICU)

- 1.1. Colonization and Infection of Patients in ICUs
 - 1.1.1. Types of ICUs
 - 1.1.2. Epidemiology
 - 1.1.3. Risk Factors Associated with Infection in ICUs
- 1.2. Impact of Nosocomial Infections in the Critically III Patient
 - 1.2.1. Importance of Nosocomial Infections in ICUs
 - 1.2.2. Risk Factors for Nosocomial Infections
 - 1.2.2.1. Patient Factors
 - 1.2.2.2. Factors of the ICU Environment
 - 1.2.2.3. Factors Related to the Healthcare Personnel
 - 1.2.3. Impact of Nosocomial Infections in Immunocompromised Patients
 - 1.2.4. Impact on Length of Stay in the ICU
- 1.3. Pneumonia Associated with Mechanical Ventilation
 - 1.3.1. Etiology
 - 1.3.2. Diagnosis
 - 1.3.3. Treatment
- 1.4. Urinary Tract Infections Associated with Catheters
 - 1.4.1. Etiology
 - 1.4.2. Diagnosis
 - 1.4.3. Treatment
- 1.5. Primary Bacteremias and Catheter-Related Bacteremias
 - 1.5.1. Etiology
 - 1.5.2. Diagnosis
 - 1.5.3. Treatment
- 1.6. Pseudomembranous Colitis
 - 1.6.1. Etiology
 - 1.6.2. Diagnosis
 - 1.6.3. Treatment
- 1.7. Infections by Opportunistic Pathogens
 - 1.7.1. Etiology
 - 1.7.2. Diagnosis
 - 1.7.3. Treatment





Structure and Content | 19 tech

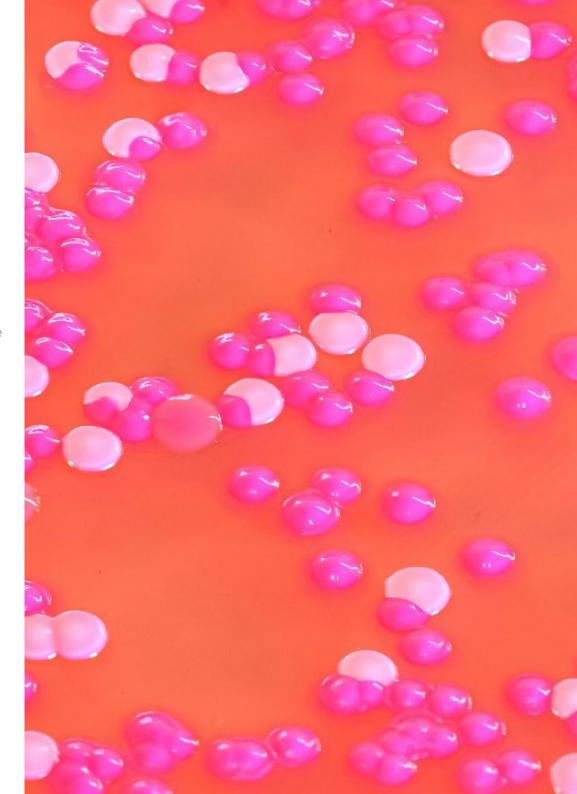
- 1.8. Appropriate Use of Antibiotics
 - 1.8.1. Programs for the Optimization of Antibiotic use (PROA) in the ICU
 - 1.8.2. Antibiotic Therapy Strategies for the Treatment of Gram-Negative Patients
 - 1.8.3. Antibiotic Therapy Strategies for the Treatment of Gram-Positive Patients
 - 1.8.4. Antibiotic Therapy Strategies for the Treatment of Co-Infections
- 1.9. Strategies for the Prevention of BMR Infections in the ICU
 - 1.9.1. Hygiene Measures
 - 1.9.2. Infection Control Measures
 - 1.9.3. Protocols and Clinical Practice Guidelines
 - 1.9.4. Education and Training of ICU Personnel
 - 1.9.5. Participation of Patients and their Families
- 1.10. Infection Prevention Strategies in the ICU
 - 1.10.1. Infection Prevention Strategies in the ICU According to the Focus
 - 1.10.1.1. Pneumonia
 - 1.10.1.2. Bacteremia
 - 1.10.1.3. Urinary Infection
 - 1.10.2. Evaluation and Quality Indicators in the Prevention of Infections
 - 1.10.3. Evaluation and Continuous Improvement Tools
 - 1.10.4. Successful Examples of Infection Prevention in ICUs

Module 2. Multidrug-Resistant Gram Negative Bacteria

- 2.1. Infections Due to Gram-Negative Microorganisms
 - 2.1.1. Epidemiology of Gram-Negative Microorganisms
 - 2.1.2. Community and Nosocomial Infections by Gram-Negative Microorganisms
 - 2.1.3. Relevance of Infections by Multidrug-Resistant Gram-Negative Microorganisms
- 2.2. Pathogenesis of Infections by Gram-Negative Microorganisms
 - 2.2.1. Factors Related to Gram-Negative Microorganisms
 - 2.2.2. Patient Factors in Gram-Negative Infections
 - 2.2.3. Other Factors in Gram-Negative Infections
- 2.3. Clinical Evaluation of Patients with Multidrug-Resistant Gram-Negative Infections
 - 2.3.1. Medical History
 - 2.3.2. Clinical Evaluation of Patients
 - 2.3.3. Other Data of Interest

tech 20 | Structure and Content

- 2.4. Complementary Tests in Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.4.1. Blood Tests
 - 2.4.2. Imaging Tests
 - 2.4.3. Microbiological Techniques
- 2.5. Estimation of Severity in Patients with Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.5.1. Gram-Negative Multidrug-Resistant Microorganisms
 - 2.5.2. Traditional Approach to Severity Estimation
 - 2.5.3. Practical Conclusions
- 2.6. Risk of Acquiring Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.6.1. Clinical Factors in the Acquisition of Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.6.2. Other Factors in the Acquisition of Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.6.3. Tools to Calculate the Risk of Presence of Multidrug-Resistant Gram-Negative Microorganisms
- 2.7. Empirical Treatment in the Suspicion of Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.7.1. Microorganisms Involved According to Localization
 - 2.7.2. Comprehensive Assessment of Patients with Suspected Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.7.3. Selection of Empirical Antibiotic Treatment
- 2.8. Targeted Therapy in Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.8.1. Adjustment of Antibiotic Therapy According to Microbiological Results
 - 2.8.2. Follow-up of Multidrug-Resistant Gram-Negative Microorganism Infection
 - 2.8.3. Most Relevant Side Effects of Antibiotherapy
- 2.9. Duration of Antibiotherapy in Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.9.1. Estimation of the Duration of Antibiotic Treatment in Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.9.2. Relevance of Focus Control in Infections by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.9.3. Special Considerations Related to Antibiotic Therapy in These Infections



- 2.10. PROA Teams in Infections Caused by Multidrug-Resistant Gram-Negative Microorganisms
 - 2.10.1. PROA Teams: History
 - 2.10.2. Impact of PROA Teams on the Correct Use of Antibiotic Treatments
 - 2.10.3. Challenge of PROA Teams in the Treatment of Infections Caused by Multidrug-Resistant Gram-Negative Microorganisms

Module 3. Antibiotic Resistance in Streptococcus, Enterococcus and Staphylococcus

- 3.1. Infections Due to Gram-Positive Bacteria
 - 3.1.1. Natural Habitat of Gram-Positive Pathogens
 - 3.1.2. Nosocomial Infections due to Gram-Positive Bacteria
 - 3.1.3. Community-Acquired Infections by Gram-Positive Bacteria
- 3.2. In Vitro and in Vivo Systems for the Study of Resistance in Gram-Positive Bacteria
 - 3.2.1. Biofilms
 - 3.2.2. Cellular Models
 - 3.2.3. Animal Models
- 3.3. Streptococcus Pneumoniae
 - 3.3.1. Clinical Significance
 - 3.3.2. Resistance Mechanisms
 - 3.3.3. Biofilms
 - 3.3.4. Treatment Options
- 3.4. Streptococcus Pyogenes
 - 3.4.1. Clinical Significance
 - 3.4.2. Resistance Mechanisms
 - 3.4.3. Biofilms
 - 3.4.4. Treatment Options

- 3.5. Streptococcus Agalactiae
 - 3.5.1. Clinical Significance
 - 3.5.2. Resistance Mechanisms
 - 3.5.3. Biofilms
 - 3.5.4. Treatment Options
- 3.6. Enterococcus Faecalis
 - 3.6.1. Clinical Significance
 - 3.6.2. Resistance Mechanisms
 - 363 Biofilms
 - 3.6.4. Treatment Options
- 3.7. Enterococcus Faecium
 - 3.7.1. Clinical Significance
 - 3.7.2. Resistance Mechanisms
 - 3.7.3. Biofilms
 - 3.7.4. Treatment Options
- 3.8. Staphylococcus Aureus
 - 3.8.1. Clinical Significance
 - 3.8.2. Resistance Mechanisms
 - 3.8.3. Biofilms
 - 3.8.4. Treatment Options
- 3.9. Mycobacterium Tuberculosis
 - 3.9.1. Clinical Significance
 - 3.9.2. Resistance Mechanisms
 - 3.9.3. Treatment Options
- 3.10. Resistance in Other Gram-Positive Bacteria
 - 3.10.1. Coagulase-Negative Staphylococcus
 - 3.10.2. Clostridioides Difficile
 - 3.10.3. Emerging Gram Positive Pathogens

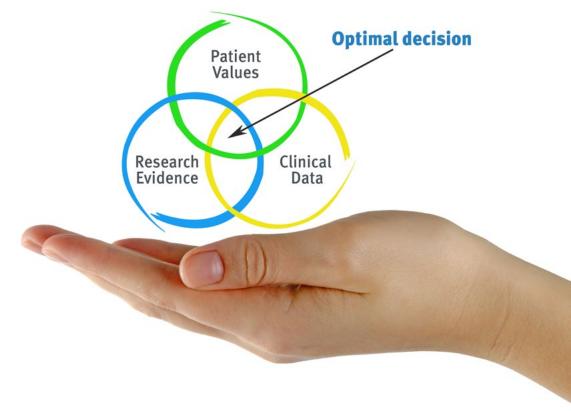


tech 24 | Methodology

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. 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, attempting to recreate the actual conditions in a pharmacist's professional 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. 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.



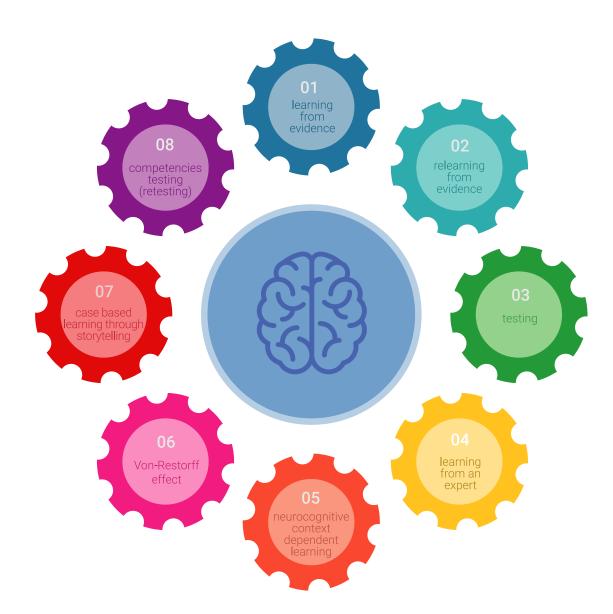


Relearning Methodology

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.



Methodology | 27 tech

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

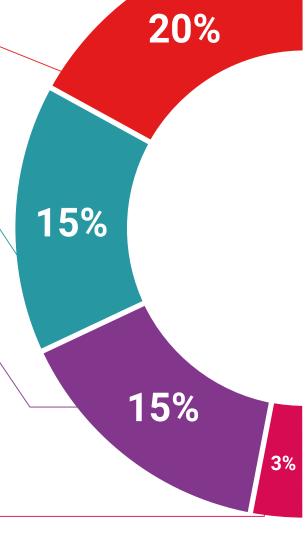
TECH introduces students to the latest techniques, to the latest educational advances, to the forefront of current pharmaceutical care procedures. All of this, first hand, and explained and detailed with precision to contribute to assimilation and a better understanding. And best of all, you can watch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

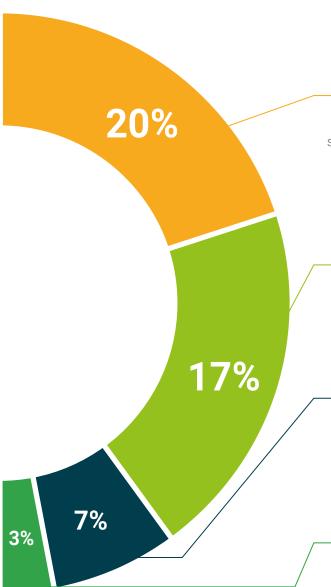
This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".





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.







tech 32 | Certificate

This private qualification will allow you to obtain a **Postgraduate Diploma in Clinical Management of Multidrug-Resistant Bacteria** 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 Diploma in Clinical Management of Multidrug-Resistant Bacteria

Modality: **online**

Duration: 6 months

Accreditation: 18 ECTS



Postgraduate Diploma in Clinical Management of Multidrug-Resistant Bacteria

This is a private qualification of 540 hours of duration equivalent to 18 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra Ia Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Dean

This qualification must always his accompanied by the university degree issued by the competent authority to practice professionally in each country.

Unique TECH Code: APVIORD238 Incidituse comicwrifficates

^{*}Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.

tech global university

Postgraduate Diploma Clinical Management of Multidrug-Resistant Bacteria

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

