

# Postgraduate Diploma

## Microbiology and Antibiotic Resistance Control





## Postgraduate Diploma Microbiology and Antibiotic Resistance Control

Course Modality: **Online**

Duration: **6 months.**

Certificate: **TECH Technological University**

Official N° of hours: **475 h.**

Website: [www.techtute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-microbiology-antibiotic-resistance-control](http://www.techtute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-microbiology-antibiotic-resistance-control)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 18*

05

Methodology

---

*p. 24*

06

Certificate

---

*p. 32*

# 01

# Introduction

Antibiotic resistance control has become one of the top priorities for several scientific groups. The exaggerated and uncontrolled use of drugs to combat the different diseases caused by the infection of different microorganisms that have been identified to date has revealed the evolutionary and adaptive capacity of these microorganisms, which have mutated in their struggle to survive the therapeutic chemical action agreed upon for their eradication. For this reason, the medical sector has developed new guidelines to alleviate this situation, aspects that have been included in the syllabus of this program. This is a multidisciplinary and innovative academic experience through which students will be able to update their praxis in the monitoring and control of antimicrobial use, delving into the chemical therapies of the future, 100% online.





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*A program that will give you the tools to combat antibiotic resistance through the most innovative antimicrobial therapies in the clinical sector today”*

Viruses, bacteria, fungi and parasites have a very high capacity for adaptability and are capable of mutating and developing competencies resistant to the various drugs used for their eradication. Although this is their intrinsic and natural characteristic, the uncontrolled consumption of antibiotics has accelerated their activity, making them immune to their effect and aggravating the danger of infections. A very clear example of this is what has happened with COVID-19, from which, several sub-lineages have emerged, such as BA.5 and BA.2.12.1, resistant to the vaccines that have been launched on the market as the pathology has progressed.

For this reason, medical professionals must carry out an exhaustive control as much as possible in relation to the use of these drugs, guiding patients and prescribing the most effective and innovative treatments for the different conditions they may suffer from. In order to update their clinical practice, TECH and a team of experts in Infectology and Biology have developed this Postgraduate Diploma in Microbiology and Antibiotic Resistance Control. It is a comprehensive, dynamic, intensive and multidisciplinary program that gathers the latest advances related to the generalities of Microbiology, focusing on super-resistance and the use of antimicrobials as a therapeutic guideline based on the most current concepts. In addition, this course will allow you to get up to date on monitoring and control strategies in the use of these chemicals, delving into the therapies of the future and the trends that are having the best results in the current medical context.

All this 100% online, through 475 hours of diverse content, designed by a top-level teaching team, specialized in this field and willing to share their experience with students throughout this 6-month program. In addition, they will have access to a state-of-the-art Virtual Campus, where all the content will be stored from the start of the course. Therefore, students will be able to organize their course schedule according to their availability, allowing them to update and improve their skills in a way that is perfectly compatible with their practice activity.

This **Postgraduate Diploma in Microbiology and Antibiotic Resistance Control** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ The development of case studies presented by experts in Clinical Infectology
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where the process of 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 have 475 hours of the best theoretical, practical and additional content to update you on the most innovative strategies for monitoring and controlling antimicrobial use”*

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*A program that will allow you to update your knowledge according to the role of nurses in today's environment of Palliative Care over 475 hours of the best theoretical, practical and additional content”*

The program's teaching staff includes professionals from sector 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 professionals must try to solve the different professional practice situations that arise during the academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*You will work intensively on a comprehensive update of your knowledge, in a consensual way and with the latest developments in Microbiology applied to the medical field.*

*You will not have to worry about tight schedules or face-to-face classes thanks to the compatibility of this program's Virtual Campus with any device with Internet connection.*



# 02 Objectives

The danger arising from antibiotic resistance and the harmful effect it can have on global health was the reason why TECH considered it necessary to develop a program that would allow students to update their practice to effectively combat this situation. For this reason, the objective of this Postgraduate Diploma is none other than to provide students with the most comprehensive and innovative information in relation to Microbiology and antimicrobial use, which will allow them to update their practice and implement the most effective concepts and strategies to ensure healthy stability in the current medical context.







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*Thanks to this program, you will be able to expand and update your knowledge in mycology and parasitology, allowing you to carry out a more effective praxis”*



## General objectives

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- ♦ Make the most comprehensive, extensive, and innovative information on antibiotic resistance and microbiological and medical guidelines to deal with it available to students
- ♦ Compile the therapeutic strategies that are having the best results in the current clinical context to deal with the different mutations that have emerged from the most common and frequent infections



*A program at the forefront of medicine through which you will improve your clinical skills 100% online, exceeding even your most ambitious goals”*





## Specific objectives

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### Module 1. Overview of Microbiology

- ♦ Provide students with advanced, in-depth, up-to-date, and multidisciplinary information that allows them to comprehensively approach the health-infectious disease process, the use of antibiotics, and antibiotic resistance
- ♦ Provide knowledge and practical-theoretical improvement that will enable reliable clinical diagnoses supported by the efficient use of diagnostic methods to indicate effective antimicrobial treatments

### Module 2. Antibiotic Resistance

- ♦ Address the crucial issue of super-resistant microbes and their relation to antimicrobial use based on the most up-to-date concepts
- ♦ Emphasise the development of future antibiotics and other therapeutic modalities for infectious diseases

### Module 3. Monitoring and Controlling the Use of Antimicrobials

- ♦ Emphasize the future challenges of infectious diseases in decreasing infectious diseases morbidity and mortality and antimicrobial treatment
- ♦ Develop normative or referential documents such as clinical practice guidelines or antimicrobial usage policies based on scientifically advanced concepts

### Module 4. Antibiotics and Antimicrobial Treatments of the Future

- ♦ Advise pharmaceutical and biotechnology industry teams in the process of research and production of new antimicrobials and alternative treatments for infectious diseases
- ♦ Master the most recent elements of antimicrobial utilization studies

# 03

# Course Management

The teaching staff of this program has been selected by TECH based not only on the professional curriculum of the people who have applied, but also based on the human qualities and commitment to the profession that they have demonstrated throughout their careers. Thanks to this, this university guarantees the highest level of support, made up of specialists in the medical field who are also experts in the fields of microbiology and infectious diseases. Therefore, students will be able to update their practice with expert guidance from the best, learning about their successful clinical strategies and gaining in-depth knowledge of current trends based on the experience of the sector's leaders.





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*You will have the support of a top-level teaching team, which will be at your disposal to answer any questions you may have during the course of this Postgraduate Diploma”*

## Management



### Dr. Quintero Casanova, Jesús

- Head of the Infectious Diseases Department, Héroes del Baire Hospital
- Medical specialist in Africa (Chad) and Venezuela
- Master's Degree in Tropical Diseases and Clinical Infectious Diseases, Pedro Kuori Institute, Havana, Cuba
- Professor of medicine and internal medicine speciality at the Isle of Youth Faculty of Medical Sciences
- Professor in the Master's Degree in Infectious Diseases Master's Degree at the Faculty of Medical Sciences of Isla de la Juventud
- Member of the Cuban Society of Internal Medicine
- Degree in Medicine and Surgery, Medical University of Havana

## Professors

### Ms. Laurence Carmenaty, Araelis

- ♦ Microbiology Specialist
- ♦ Professor on the Medicine Degree in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Member of the Cuban Society of Microbiology
- ♦ Member of the Association of Pedagogues
- ♦ Degree in Microbiology, University of Havana
- ♦ Master's Degree in infectious diseases

### Ms. González Fiallo, Sayli

- ♦ Director of the Health Analysis, Biostatistics, and Surveillance Unit, Municipal Health Directorate, Isle of Youth
- ♦ Professor of the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Degree in Hygiene and Epidemiology
- ♦ Master's Degree in Epidemiology

**Dr. Valle Vargas, Mariano**

- ♦ Head of the Internal Medicine Department of the Héroes del Baire Hospital
- ♦ Specialist in Internal Medicine at Héroes del Baire Hospital
- ♦ Medical specialist in Venezuela
- ♦ Professor on the Medicine Degree and Internal Medicine Speciality at the Faculty of Medical Sciences of Isla de la Juventud
- ♦ Professor of the Professional Master's Degree in Infectious Diseases in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Degree in Medicine and Surgery, University of Havana
- ♦ Diploma in Epidemiology
- ♦ Master's Degree in Health Biostatistics
- ♦ Member of the Cuban Society of Internal Medicine
- ♦ Member of the Cuban Society of Paediatricians

**Dr. Luís Dávila, Heenry**

- ♦ Specialist in Gynecology and Obstetrics at Héroes del Baire Hospital
- ♦ Head of the Neck Pathology Service, Heroes del Baire Hospital
- ♦ Medical specialist in Guatemala
- ♦ Member of the Cuban Society of Gynecology and Obstetrics
- ♦ Member of the Cuban Society of Paediatricians
- ♦ Professor of Medicine, Faculty of Medical Sciences, Isla de la Juventud
- ♦ Degree in Medicine and Surgery, University of Havana
- ♦ Master's Degree in comprehensive care for women

**Dr. Dranguet Bouly, José Ismael**

- ♦ Specialist in Internal Medicine and Intensive Therapy, Héroes del Baire Hospital
- ♦ Medical specialist in Mozambique
- ♦ Professor on the Medicine Degree and Internal Medicine Speciality at the Faculty of Medical Sciences of Isla de la Juventud
- ♦ Professor of the Professional Master's Degree in Infectious Diseases in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Professor at the Catholic University of Santiago de Guayaquil, Ecuador.
- ♦ Member of the Cuban Society of Paediatricians
- ♦ Member of the Cuban Society of Internal medicine and the Cuban Society of Intensive Therapy
- ♦ Degree in Medicine and Surgery, University of Havana
- ♦ Master's Degree in Infectious Diseases from the Pedro Kouri Institute of Cuba

**Dr. Cantalapedra Torres, Alejandro**

- ♦ Specialist in Pediatrics, Héroes del Baire Hospital
- ♦ Professor in the Medicine Degree and Pediatrics Specialty in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Member of the Cuban Society of Pediatrics
- ♦ Medical specialist in Haiti
- ♦ Medical Specialist in Antigua and Barbuda
- ♦ Degree in Medicine and Surgery, University of Havana
- ♦ Certificate in Medical Teaching
- ♦ Certificate in Health Management
- ♦ Master's Degree in infectious diseases

**Dr. Jiménez Valdés, Erlivan**

- ♦ Specialist in Pediatrics, Héroes del Baire Hospital
- ♦ Member of the Cuban Society of Pediatrics
- ♦ Professor in the Medicine Degree and Pediatrics Specialty in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Member of tribunals for national scientific events
- ♦ Degree in Medicine and Surgery, University of Havana
- ♦ Master's Degree in comprehensive childcare

**Dr. Batista Valladares, Adrián**

- ♦ Head of Senior Citizen Services in Isla de la Juventud
- ♦ Professor of the medicine and family medicine degrees at the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Professor of the Professional Master's Degree in Infectious Diseases in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Degree in Medicine and Surgery, University of Havana
- ♦ Certificate in Diagnostic Ultrasound
- ♦ Diploma in healthcare management
- ♦ Master's Degree in Clinical Infectology
- ♦ Member of the Cuban Society of Family Medicine







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*Make the most of this opportunity to learn about the latest advances in this subject to apply it to your daily practice”*

# 04

## Structure and Content

The teaching team has worked intensively in the development of this Postgraduate Diploma's syllabus, selecting the information considered most relevant and necessary for the effective updating of the students' medical practice. To this purpose, they have designed 475 hours of the best theoretical, practical and additional content, which will help students to expand their knowledge and to catch up with the latest trends in the use of antimicrobials in the fight against antibiotic resistance. In addition, TECH has compacted these resources in a convenient and flexible 100% online format, so you can access it wherever and whenever you want, through any device with internet connection.





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*Do you know the Relearning methodology?  
Thanks to its use in this program's content,  
you will experience a natural and progressive  
knowledge update, without even realizing it”*

## Module 1. Overview of Microbiology

- 1.1. General Elements of Microbiology
  - 1.1.1. The Role of Microbiology in the Study of Infectious Diseases
  - 1.1.2. Structure and Function of the Microbiology Laboratory
  - 1.1.3. Indication and interpretation of microbiological studies
- 1.2. Virology
  - 1.2.1. General Characteristics of Viruses
  - 1.2.2. Classification and Main Viruses Affecting Humans
  - 1.2.3. Emerging Viruses
  - 1.2.4. Virological Studies
- 1.3. Bacteriology: Current Concepts for Antibiotic Therapeutics
  - 1.3.1. General Characteristics of Bacteria
  - 1.3.2. Classification and Main Bacteria Affecting Humans
  - 1.3.3. Microbiological Studies
- 1.4. Mycology
  - 1.4.1. General Characteristics of Fungi
  - 1.4.2. Classification and Main Fungi Affecting Humans
  - 1.4.3. Mycological Studies
- 1.5. Parasitology
  - 1.5.1. General Characteristics of Parasites
  - 1.5.2. Classification and Main Parasites Affecting Humans
  - 1.5.3. Parasitological Studies
- 1.6. The Microbiological Sample: Collection, Storage and Transport
  - 1.6.1. The Microbiological Sampling Process: Preanalytical, Analytical, and Postanalytical Stages
  - 1.6.2. Sampling Requirements for the Main Microbiological Studies used in Daily Clinical Practice: Blood, Urine, Stool, Sputum
- 1.7. Antibigram: New Concepts for Interpretation and Utilization
  - 1.7.1. Traditional Antibigram Reading
  - 1.7.2. Interpreted Antibigram Reading and the Mechanisms of New Antimicrobial Resistance Phenotypes
  - 1.7.3. Antimicrobial Mapping and Resistance Patterns

- 1.8. Rapid Diagnostic Methods: News about their Application
  - 1.8.1. Rapid Diagnostic Methods for Viruses
  - 1.8.2. Rapid Diagnostic Methods for Bacteria
  - 1.8.3. Rapid Diagnostic Methods for Fungi
  - 1.8.4. Rapid Diagnostic Methods for Parasites
- 1.9. Molecular Biology in Microbiological Diagnostics: Its Role in the Future
  - 1.9.1. Development and Application of Molecular Biology in Microbiological Methods
- 1.10. Microbiology: Challenges to Improve Antibiotic Usage and Control Antibiotic Resistance
  - 1.10.1. Challenges and Obstacles for Microbiological Diagnostics
  - 1.10.2. Future Challenges of Microbiology Laboratory Management in the Correct and Rational Use of Antibiotics
  - 1.10.3. Future Microbiological Techniques to Study Antibiotic Resistance

## Module 2. Antibiotic Resistance

- 2.1. Emergence and Development of Antibiotic Resistance
  - 2.1.1. Concept
  - 2.1.2. Classification
  - 2.1.3. Origins and Development
- 2.2. Mechanisms of Antibiotic Resistance: An Update
  - 2.2.1. Mechanisms of Antimicrobial Resistance
  - 2.2.2. New Resistance Mechanisms
- 2.3. Staphylococcal Resistance: Yesterday, Today, and Tomorrow
  - 2.3.1. Evolution of Staphylococcal Resistance
  - 2.3.2. Mechanisms of Staphylococcal Resistance
- 2.4. Resistance of Gram-Positive Germs: Latest Figure 2. Principles of Corporate Governance
  - 2.4.1. Evolution and Resistance of GramPositive Germs
  - 2.4.2. Resistance Mechanisms of GramPositive Germs
- 2.5. Resistance of Gram-Negative Germs: Current Clinical Implications
  - 2.5.1. Evolution of GramNegative Germ Resistance
  - 2.5.2. Resistance Mechanisms of GramNegative Germs
- 2.6. Virus Resistance
  - 2.6.1. Evolution of Virus Resistance
  - 2.6.2. Virus Resistance Mechanisms



- 2.7. Fungal Resistance
  - 2.7.1. Evolution of Fungal Resistance
  - 2.7.2. Mechanisms of Fungal Resistance
- 2.8. Parasite Resistance: An Emerging Problem
  - 2.8.1. Evolution of Parasite Resistance
  - 2.8.2. Mechanisms of Parasite Resistance
  - 2.8.3. Resistance to Antimalarials
- 2.9. New Mechanisms of Antibiotic Resistance and Superbugs
  - 2.9.1. Emergence and Progression of Superbugs
  - 2.9.2. New Resistance Mechanisms of Superbugs
- 2.10. Antibiotic Resistance Control Mechanisms and Programs
  - 2.10.1. Antibiotic Resistance Control Strategies
  - 2.10.2. Global Program and International Experiences in the Control of Antibiotic Resistance

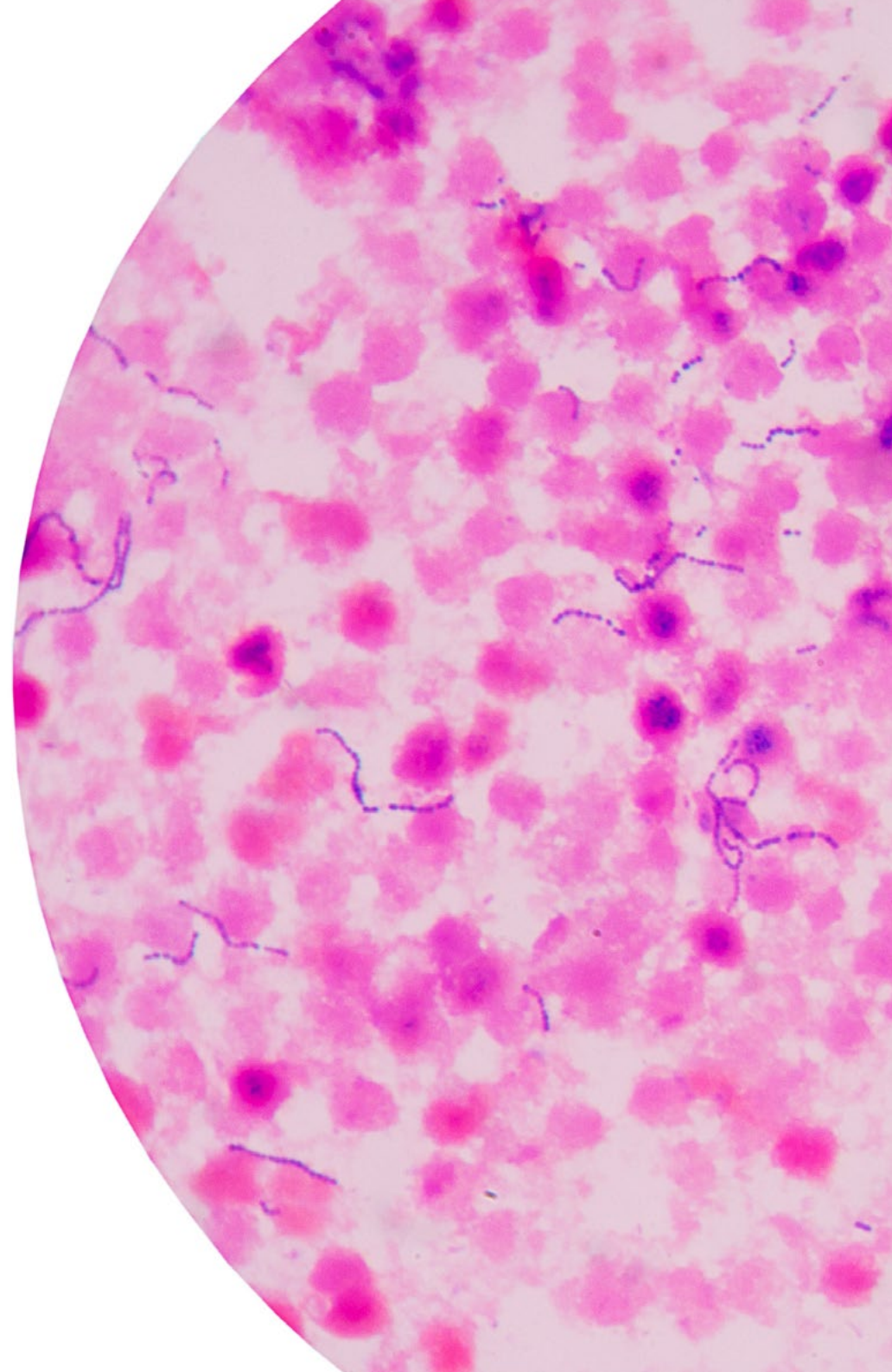
### Module 3. Monitoring and Controlling the Use of Antimicrobials

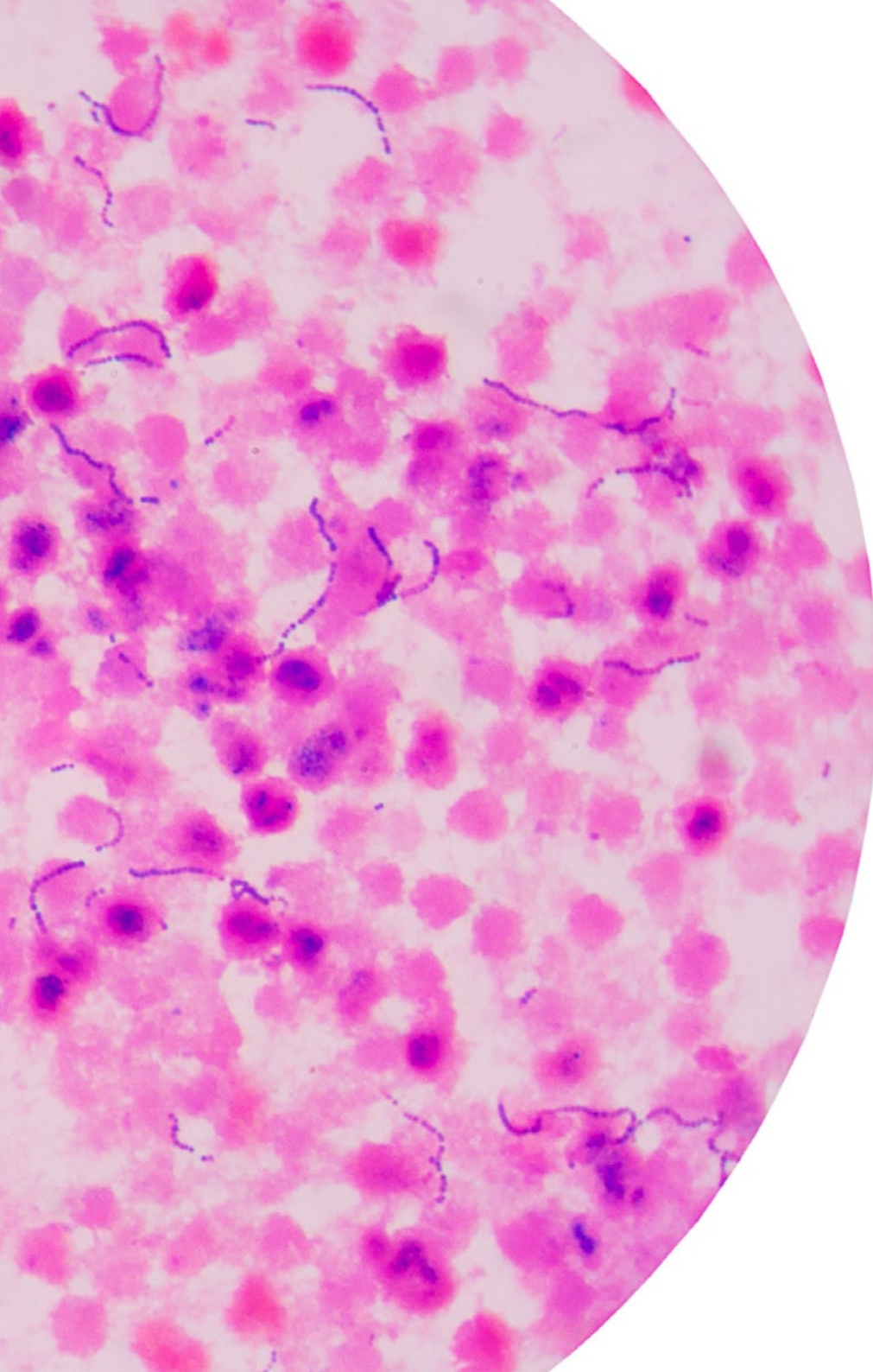
- 3.1. Antibiotic Treatment Duration in the Treatment of Infections: New Role of Biomarkers
  - 3.1.1. Update on the Adequate Duration of the Most Frequent Infections
  - 3.1.2. Clinical and Laboratory Parameters to Determine the Duration of Treatment
- 3.2. Antimicrobial Usage Studies: Most Recent Impacts
  - 3.2.1. The Significance of Antimicrobial Usage Studies
  - 3.2.2. Results of Greater Impact in Recent Years by Antimicrobial Usage Studies
- 3.3. Antibiotic Committees in Hospitals: Their Role in the Future
  - 3.3.1. Structure and Operation
  - 3.3.2. Objectives
  - 3.3.3. Activities
  - 3.3.4. Impacts
- 3.4. Antimicrobial Use Policies: Current Impact on Antimicrobial Use
  - 3.4.1. Concepts
  - 3.4.2. Types of Policies
  - 3.4.3. Objectives
  - 3.4.4. Impacts

- 3.5. Pharmacotherapeutic Committees: Practical Importance
  - 3.5.1. Structure and Function
  - 3.5.2. Objectives
  - 3.5.3. Activities
  - 3.5.4. Impacts
- 3.6. Infectious Disease Specialists and their Role in the Rational Use of Antimicrobials
  - 3.6.1. Functions and Activities of Infectious Disease Specialists to Promote and Encourage the Rational Use of Antimicrobials
- 3.7. Impact of Training and Professional Development on Antimicrobial Usage
  - 3.7.1. Importance of Training and Professional Development
  - 3.7.2. Types
  - 3.7.3. Impacts
- 3.8. Hospital Strategies for the Rational Use of Antimicrobials: What the Evidence Says
  - 3.8.1. Hospital Strategies for the Control of the Rational Use of Antimicrobials
  - 3.8.2. Impacts
- 3.9. Scientific Research for the Future Control and Monitoring of Antibiotic Therapy in Patients with Sepsis
  - 3.9.1. Search for New Parameters and Markers for Monitoring and Control of Antibiotic Therapeutics

#### Module 4. Antibiotics and Antimicrobial Treatments of the Future

- 4.1. Research, Approval, and Commercialization of New Antibiotics
  - 4.1.1. Antimicrobial Research
  - 4.1.2. Antimicrobial Approval Process
  - 4.1.3. Antimicrobial Marketing and Large Pharmaceutical Companies
- 4.2. Ongoing Clinical Trials for the Approval of New Antibiotics
  - 4.2.1. New Clinical Trials on Antimicrobials
- 4.3. Old Antibiotics with New Uses
  - 4.3.1. The Role of Old Antibiotics with New Uses
  - 4.3.2. Antimicrobial Withdrawal
  - 4.3.3. Chemical Alterations of Old Antimicrobials





- 4.4. Treatment Goals and New Ways to Fight Infections: What's New in Research
  - 4.4.1. New Treatment Goals
  - 4.4.2. New Ways to Treat Sepsis
- 4.5. Monoclonal Antibodies in Infections: Present and Future
  - 4.5.1. Origin and Emergence of Monoclonal Antibodies
  - 4.5.2. Classification
  - 4.5.3. Clinical Uses
  - 4.5.4. Impact Results in Infectious Diseases
- 4.6. Other Drugs to Regulate and Stimulate Immune Response against Infection
  - 4.6.1. Drugs to Regulate and Control the Immune Response
- 4.7. Futuristic Antibiotics
  - 4.7.1. The Future of Antimicrobials
  - 4.7.2. Antibiotics of the Future

“ *A program that will help you contribute to the fight against antibiotic resistance effectively through mastery of the most effective current and future antibiotic regimens* ”

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 we use the Case Method

What should a professional do in a given situation? 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. Specialists learn better, faster, 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, trying to recreate the real conditions in the physician'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. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of 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.

This 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, a real revolution with respect to the mere study and analysis of cases.

*Professionals will learn through real cases and by resolving 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 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. 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 highly specific and precise.

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.



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and 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 the videos as many times as you like.



#### 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

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 Microbiology and Antibiotic Resistance Control guarantees you, in addition to the most rigorous and up-to-date training, access to a Postgraduate Diploma issued by TECH Technological University.







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*Successfully complete this program and receive your university degree without travel or laborious paperwork”*

This **Postgraduate Diploma in Microbiology and Antibiotic Resistance Control** contains the most complete and up-to-date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Diploma** issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Microbiology and Antibiotic Resistance Control**  
Official N° of hours: **475 h.**



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

future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

personalized service innovation

knowledge present quality

online training

development languages

virtual classroom

**tech** technological  
university

**Postgraduate Diploma**  
Microbiology and Antibiotic  
Resistance Control

Course Modality: Online

Duration: 6 months.

Certificate: TECH Technological University

Official N° of hours: 475 h.

# Postgraduate Diploma

## Microbiology and Antibiotic Resistance Control