

# Postgraduate Diploma

## Antibiotics in the Treatment of Bacterial Infections





## Postgraduate Diploma Antibiotics in the Treatment of Bacterial Infections

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/pharmacy/postgraduate-diploma/postgraduate-diploma-antibiotics-treatment-bacterial-infections](http://www.techtitute.com/us/pharmacy/postgraduate-diploma/postgraduate-diploma-antibiotics-treatment-bacterial-infections)

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# 01

# Introduction

Antibiotics are effective in treating infections caused by unicellular microorganisms that can cause disease in living organisms. They act by preventing bacteria from continuing to reproduce inside the body. However, their misuse has caused bacteria to develop resistance, making it necessary for developers to continue studying possible mutations and generating new drugs. With this in mind, this program brings together the indispensable knowledge on the subject, helping students to specialize and develop their own research.



“

*Enroll in the program and help the scientific community to develop antibiotics that fight virus mutations”*

Within the scientific community, there is a wide variety of antibiotics that help fight bacterial diseases. Even so, bacterial resistance constitutes one of the greatest threats to global health, food safety and scientific development.

Taking into account the importance of the figure of the pharmacist in this sector, this Postgraduate Diploma in Antibiotics in the Treatment of Bacterial Infections has been developed. In this way, students will learn about the most current knowledge in the field of antibiotics, with emphasis on advances in the development of more effective drugs to combat certain viruses.

Thus, the degree will begin by learning about the emergence of antimicrobial therapy, classifying the different drugs by their general elements and their role in the prevention of global morbidity. Then, the advances in the study of penicillins and cephalosporins will be presented, the latter being a beta-lactam antibiotic.

On the other hand, a study will be made of antibiotics used specifically for respiratory diseases, such as Macrolides, which prevent bacteria from producing the proteins they need to grow and multiply. Finally, the recommendations for the use of antibiotics in outpatients and the follow-up that should be carried out to avoid overuse will be discussed.

For all these reasons, the program will help graduating students to broaden their employment options, allowing them to access a market that demands experts willing to develop new drugs. They will also be prepared to conduct independent research focused on the development of new antibiotics.

This **Postgraduate Diploma in Antibiotics in the Treatment of Bacterial Infections** 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 focused on advances in antibiotic therapy and antibiotic resistance
- ♦ 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 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

“Antibiotic resistance is one of the greatest threats to global health”

“

*It delves into the mechanism of action of different drugs such as cyclic lipopeptides, macrolides or ketolides”*

*Register now and continue your career path in the pharmaceutical world, developing new antibiotics.*

*Identifies the general and recent elements of antimicrobial therapeutics.*

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

Its 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 an immersion education programmed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.



02

# Objectives

The main goal of this program is to help students acquire the knowledge they need to conduct their own pharmacological research, either by developing a new drug or improving existing ones. As a result, they will be qualified to apply for a new job in the research team of international pharmaceutical companies, as well as to conduct independent research that will change the course of antibiotics.







“

*Change your professional perspectives  
and develop independent research  
to improve antibiotic efficacy”*



## General Objectives

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- ◆ Guarantee professional improvement by constantly delving deeper and updating what we know
- ◆ Know the scientific evidence on antibiotic therapy and antimicrobial resistance
- ◆ Establish the correct use of drugs and the proper treatment of infectious diseases
- ◆ Use a multidisciplinary and integrative approach to facilitate the control of these pathologies



*Update your knowledge and move up in the scientific community by enrolling now in this Postgraduate Diploma"*





## Specific Objectives

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### Module 1. Antimicrobials: General Aspects

- ◆ Know the emergence and development of antimicrobial therapeutics
- ◆ Identify the general and recent elements of antimicrobial therapeutics to define concepts and developments in the area
- ◆ Learn what recent discoveries have been made about antibiotics and the blood-brain barrier
- ◆ Determine the safety of antibiotics in pregnancy and lactation based on the latest scientific findings

### Module 2. Antibiotics I

- ◆ Know the advances in the knowledge of the synthesis and structure of the beta-lactam ring
- ◆ Analyze new drugs and their future role in anti-infective therapeutics, classifying them and understanding their therapeutic uses
- ◆ Acquire the ability to discriminate between different types of penicillin
- ◆ Deepen in the use of Cephalosporins

### Module 3. Antibiotics II

- ◆ Know the new drugs used for gram-positive infections
- ◆ Deepen in the mechanism of action of different drugs such as cyclic lipopeptides, macrolides or ketolides
- ◆ Identify the latest scientific recommendations on respiratory quinolones

### Module 4. Antibiotics III

- ◆ Know in detail the antimicrobial spectrum of Oxazolinones, Sulfas and Lincosamides
- ◆ Deepen in the practical use in tuberculosis (TB) and other infections at present, using Rifamycins
- ◆ Know the use and recommendations of parenteral antibiotics in ambulatory patients
- ◆ Analyze current antibiotic parameters for multidrug-resistant bacteria

# 03

# Course Management

For the optimal development of the academic and professional faculties of the students, this Postgraduate Diploma has a teaching staff specialized in medicine and infectious diseases. They have developed their careers in countries where antibiotic-resistant viral infections are common. For all this, they have the experience to provide a complete education, making use of real cases to exemplify the knowledge.



A detailed 3D rendering of a microbial environment. The scene is filled with various types of bacteria, including long, rod-shaped bacilli and smaller, spherical cocci. Some bacteria are shown in pairs or chains. The background is a soft, hazy light blue and white, suggesting a fluid medium. The overall composition is dynamic, with bacteria scattered throughout the frame.

“

*The faculty of this program  
has extensive work experience  
in antibiotic development”*

## Management



### Dr. Quintero Casanova, Jesús

- ♦ Degree in Medicine and Surgery from the Medical University of Havana. Cuba
- ♦ Specialist in Internal Medicine. "Héroes del Baire" Hospital
- ♦ Master's Degree in Tropical Diseases and Clinical Infectious Diseases from the Pedro Kuori Institute, Havana. Cuba
- ♦ Head of the Infectious Diseases Department of the Héroes del Baire Hospital
- ♦ Member of the Cuban Society of Internal Medicine
- ♦ Member of the Cuban Society of Paediatricians
- ♦ Medical specialist in Africa (TChad) and Venezuela
- ♦ Professor on the Medicine Degree and Internal Medicine Speciality at the Faculty of Medical Sciences of Isla de la Juventud
- ♦ Main professor of the Professional Master's Degree in infectious diseases of the Faculty of Medical Sciences of the Isle of Youth
- ♦ Member of state examining boards for the medicine degree and internal medicine
- ♦ National Research Award in Cuba
- ♦ Medical Science Teaching Award. Cuba

## Professors

### Dr. Valle Vargas, Mariano

- ♦ Head of the Internal Medicine Department of the Héroes del Baire Hospital
- ♦ Member of the Cuban Society of Internal Medicine
- ♦ Member of the Cuban Society of Paediatricians
- ♦ 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
- ♦ Member of state examining boards for the medicine degree and internal medicine
- ♦ Member of tribunals for national scientific events. Cuba
- ♦ Degree in Medicine and Surgery from the University of Havana. Cuba
- ♦ Specialist in Internal Medicine. "Héroes del Baire" Hospital
- ♦ Master's Degree in Health Biostatistics
- ♦ Diploma in Epidemiology
- ♦ Medical Science Teaching Award. Cuba

### Dr. Cantalapedra Torres, Alejandro

- ♦ 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. Cuba
- ♦ Medical specialist in Haiti
- ♦ Medical specialist in Antigua and Barbuda year 2008
- ♦ Degree in Medicine and Surgery from the University of Havana. Cuba
- ♦ Pediatrician. "Héroes del Baire" Hospital
- ♦ Master's Degree in infectious diseases
- ♦ Certificate in Medical Teaching
- ♦ Certificate in Health Management

### Dr. Laurence Carmenaty, Araelis

- ♦ 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
- ♦ She has participated in national and international microbiology events in Cuba and Venezuela

**Dr. Dranguet Bouly, José Ismael**

- ♦ Head of the Internal Medicine Department of the Héroes del Baire Hospital
- ♦ Member of the Cuban Society of Internal medicine and the Cuban Society of Intensive Therapy
- ♦ Member of the Cuban Society of Paediatricians
- ♦ 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
- ♦ Member of state examining boards for the medicine degree and internal medicine
- ♦ Member of tribunals for national scientific events. Cuba
- ♦ Professor at the Catholic University of Santiago de Guayaquil, Ecuador
- ♦ Degree in Medicine and Surgery from the University of Havana. Cuba
- ♦ Specialist in Internal Medicine and Intensive Therapy. "Héroes del Baire" Hospital
- ♦ Master's Degree in Infectious Diseases from the Pedro Kouri Institute of Cuba
- ♦ Medical Science Teaching Award. Cuba

**Dr. González Fiallo, Sayli**

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

**Dr. Dávila, Henry Luis**

- ♦ Member of the Cuban Society of Gynecology and Obstetrics
- ♦ Member of the Cuban Society of Paediatricians
- ♦ Medical specialist in Guatemala
- ♦ Professor on the Medicine Degree in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Member of state examination boards in the field of medicine
- ♦ Member of tribunals for national scientific events. Cuba
- ♦ National research award. Cuba
- ♦ Degree in Medicine and Surgery from the University of Havana. Cuba
- ♦ Specialist in Gynecology and Obstetrics at Héroes del Baire Hospital. Cuba
- ♦ Master's Degree in comprehensive care for women
- ♦ Head of the Neck Pathology Service at Heroes del Baire Hospital
- ♦ Medical Science Teaching Award. Cuba

**Dr. Jiménez Valdés, Erlivan**

- ♦ 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. Cuba
- ♦ Medical specialist in Venezuela
- ♦ Degree in Medicine and Surgery from the University of Havana. Cuba
- ♦ Pediatrician. "Héroes del Baire" Hospital
- ♦ Master's Degree in comprehensive childcare





**Dr. Batista Valladares, Adrián**

- ◆ Head of Senior Citizen Services in Isla de la Juventud. Cuba
- ◆ Member of the Cuban Society of Family Medicine
- ◆ Professor of the career of medicine and speciality of family medicine at the Isle of Youth Faculty of Medical Sciences
- ◆ Professor of the Professional Master's Degree in Infectious Diseases in the Faculty of Medical Sciences in Isla de la Juventud
- ◆ Member of state examining boards for the medicine degree and speciality of family medicine
- ◆ Member of tribunals for national scientific events. Cuba
- ◆ Degree in Medicine and Surgery from the University of Havana. Cuba
- ◆ Specialist in Family and Community Medicine
- ◆ Master's Degree in Clinical Infectology
- ◆ Certificate in Diagnostic Ultrasound
- ◆ Diploma in healthcare management

# 04

# Structure and Content

The program designed for this Postgraduate Diploma in Antibiotics in the Treatment of Bacterial Infections includes all the necessary aspects to help students specialize in this sector. This is of utmost importance because of how quickly bacteria develop resistance to drugs. Therefore, they should know the structure of each antibiotic developed to date and its interaction with the body. Upon completion, the student will be able to lead and plan their own research to develop and prevent viruses and infectious agents from fighting drugs.





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*By enrolling in this program, you will gain a unique academic experience to boost your professional career”*

## Module 1. Antimicrobials: General Aspects

- 1.1. History and Development of Antimicrobials
  - 1.1.1. Emergence and Development of Antimicrobial Treatments
  - 1.1.2. Impact on Morbimortality of Infectious Diseases
- 1.2. Classifications: Practical and Future Use of Each Each One Of Them
  - 1.2.1. Chemical Classification
  - 1.2.2. Classification by Antimicrobial Action
  - 1.2.3. Classification According to their Antimicrobial Spectrum
- 1.3. Update on the Mechanisms of Action of Antimicrobials
  - 1.3.1. Main Antimicrobial Mechanisms of Action
- 1.4. General and Latest Elements of Antimicrobial Treatments
  - 1.4.1. General and Recent Concepts in the Use of Antimicrobials
  - 1.4.2. New Developments in the Use of Antimicrobial Combinations
  - 1.4.3. Interactions between Antimicrobials
- 1.5. Antibiotic Prophylaxis: Its Current Role in Surgical Morbidity and Mortality
  - 1.5.1. Concept
  - 1.5.2. Objectives
  - 1.5.3. Types of Antibiotic Prophylaxis
  - 1.5.4. Perioperative Antibiotic Prophylaxis
- 1.6. Phased Antibiotic Treatment: Current Criteria
  - 1.6.1. Concept
  - 1.6.2. Principles
  - 1.6.3. Objectives
- 1.7. Latest Concepts in the Use of Antibiotics in Renal Failure
  - 1.7.1. Renal Excretion of Antibiotics
  - 1.7.3. Renal Toxicity of Antibiotics
  - 1.7.4. Dose Modification in Renal Failure
- 1.8. Antibiotics and the Blood-Brain Barrier: Recent Findings
  - 1.8.1. The Passage of Antibiotics through the Blood-Brain Barrier
  - 1.8.2. Antibiotics in Central Nervous System Infections

- 1.9. Antibiotics and Liver Failure: Progress and Future Challenges
  - 1.9.1. Hepatic Metabolism of Antibiotics
  - 1.9.2. Hepatic Toxicity of Antimicrobials
  - 1.9.3. Dose Adjustment in Hepatic Insufficiency
- 1.10. Antibiotic Use in the Immunosuppressed: The New Paradigm
  - 1.10.1. Immune Response to Infection
  - 1.10.2. Main Opportunistic Germs in the Immunosuppressed
  - 1.10.3. Principles for the Choice and Duration of Antibiotic Therapy in the Immunosuppressed
- 1.11. Antibiotics in Pregnancy and Lactation: The Safety of their Use According to the Latest Scientific Findings
  - 1.11.1. The Passage of Antibiotics through the Placenta
  - 1.11.2. Antibiotics and Breast Milk
  - 1.11.3. Teratogenicity of Antibiotics

## Module 2. Antibiotics I


- 2.1. Advances in the Knowledge of the Synthesis and Structure the Beta-Lactam Ring
  - 2.1.1. Structure of the Beta-Lactam Ring
  - 2.1.2. Drugs that Act on the Synthesis of the Beta-Lactam Ring
- 2.2. Penicillins: New Drugs and their Future Role in Anti-Infection Treatments
  - 2.2.1. Classification
  - 2.2.2. Mechanism of Action
  - 2.2.3. Antimicrobial Spectrum
  - 2.2.4. Pharmacokinetics and Pharmacodynamics
  - 2.2.5. Therapeutic Uses
  - 2.2.6. Adverse Effects
  - 2.2.7. Presentation and Dosage

- 2.3. Antistaphylococcal Penicillins: From Old to New and their Practical Implications
  - 2.3.1. Classification
  - 2.3.2. Mechanism of Action
  - 2.3.3. Antimicrobial Spectrum
  - 2.3.4. Pharmacokinetics and Pharmacodynamics
  - 2.3.5. Therapeutic Uses
  - 2.3.6. Adverse Effects
  - 2.3.7. Presentation and Dosage
- 2.4. Antipseudomonal Penicillins: Current Resistance Challenge
  - 2.4.1. Classification
  - 2.4.2. Mechanism of Action
  - 2.4.3. Antimicrobial Spectrum
  - 2.4.4. Pharmacokinetics and Pharmacodynamics
  - 2.4.5. Therapeutic Uses
  - 2.4.6. Adverse Effects
  - 2.4.7. Presentation and Dosage
- 2.5. Cephalosporins: Present and Future
  - 2.5.1. Classification
  - 2.5.2. Mechanism of Action
  - 2.5.3. Antimicrobial Spectrum
  - 2.5.4. Pharmacokinetics and Pharmacodynamics
  - 2.5.5. Therapeutic Uses
  - 2.5.6. Adverse Effects
  - 2.5.7. Presentation and Dosage
- 2.6. Oral Cephalosporins: New Developments in their Outpatient Use
  - 2.6.1. Classification
  - 2.6.2. Mechanism of Action
  - 2.6.3. Antimicrobial Spectrum
  - 2.6.4. Pharmacokinetics and Pharmacodynamics
  - 2.6.5. Therapeutic Uses
  - 2.6.6. Adverse Effects
  - 2.6.7. Presentation and Dosage
- 2.7. Monobactams
  - 2.7.1. Classification
  - 2.7.2. Mechanism of Action
  - 2.7.3. Antimicrobial Spectrum
  - 2.7.4. Pharmacokinetics and Pharmacodynamics
  - 2.7.5. Therapeutic Uses
  - 2.7.6. Adverse Effects
  - 2.7.7. Presentation and Dosage
- 2.8. Carbapenems
  - 2.8.1. Classification
  - 2.8.2. Mechanism of Action
  - 2.8.3. Antimicrobial Spectrum
  - 2.8.4. Pharmacokinetics and Pharmacodynamics
  - 2.8.5. Therapeutic Uses
  - 2.8.6. Adverse Effects
  - 2.8.7. Presentation and Dosage
- 2.9. Bataclatamases: The Recent Discovery of Strains and their Role in Resistance
  - 2.9.1. Classification
  - 2.9.2. Action on Beta-Lactams
- 2.10. Beta-Lactamase Inhibitors
  - 2.10.1. Classification
  - 2.10.2. Mechanism of Action
  - 2.10.3. Antimicrobial Spectrum
  - 2.10.4. Pharmacokinetics and Pharmacodynamics
  - 2.10.5. Therapeutic Uses
  - 2.10.6. Adverse Effects
  - 2.10.7. Presentation and Dosage

### Module 3. Antibiotics II

- 3.1. Glycopeptides: The New Drugs for GramPositive Germs
  - 3.1.1. Classification
  - 3.1.2. Mechanism of Action
  - 3.1.3. Antimicrobial Spectrum
  - 3.1.4. Pharmacokinetics and Pharmacodynamics
  - 3.1.5. Therapeutic Uses
  - 3.1.6. Adverse Effects
  - 3.1.7. Presentation and Dosage
- 3.2. Cyclic Lipopeptides: Recent Advances and its Future Role
  - 3.2.1. Classification
  - 3.2.2. Mechanism of Action
  - 3.2.3. Antimicrobial Spectrum
  - 3.2.4. Pharmacokinetics and Pharmacodynamics
  - 3.2.5. Therapeutic Uses
  - 3.2.6. Adverse Effects
  - 3.2.7. Presentation and Dosage
- 3.3. Macrolides: Their Role as an Immunomodulator in the Respiratory System
  - 3.3.1. Classification
  - 3.3.2. Mechanism of Action
  - 3.3.3. Antimicrobial Spectrum
  - 3.3.4. Pharmacokinetics and Pharmacodynamics
  - 3.3.5. Therapeutic Uses
  - 3.3.6. Adverse Effects
  - 3.3.7. Presentation and Dosage
- 3.4. Ketolides
  - 3.4.1. Classification
  - 3.4.2. Mechanism of Action
  - 3.4.3. Antimicrobial Spectrum
  - 3.4.4. Pharmacokinetics and Pharmacodynamics
  - 3.4.5. Therapeutic Uses
  - 3.4.6. Adverse Effects
  - 3.4.7. Presentation and Dosage



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- 3.5. Tetracyclines: Old and New Indications According to the Most Recent Advances in Emerging Diseases
    - 3.5.1. Classification
    - 3.5.2. Mechanism of Action
    - 3.5.3. Antimicrobial Spectrum
    - 3.5.4. Pharmacokinetics and Pharmacodynamics
    - 3.5.5. Therapeutic Uses
    - 3.5.6. Adverse Effects
    - 3.5.7. Presentation and Dosage
  - 3.6. Aminoglycosides: Facts and Realities of their Current and Future Utilization
    - 3.6.1. Classification
    - 3.6.2. Mechanism of Action
    - 3.6.3. Antimicrobial Spectrum
    - 3.6.4. Pharmacokinetics and Pharmacodynamics
    - 3.6.5. Current Therapeutic Uses and Future Trends
    - 3.6.6. Adverse Effects
    - 3.6.7. Presentation and Dosage
  - 3.7. Quinolones: All Generations and Practical Use
    - 3.7.1. Classification
    - 3.7.2. Mechanism of Action
    - 3.7.3. Antimicrobial Spectrum
    - 3.7.4. Pharmacokinetics and Pharmacodynamics
    - 3.7.5. Therapeutic Uses
    - 3.7.6. Adverse Effects
    - 3.7.7. Presentation and Dosage

- 3.8. Respiratory Quinolones: Latest Recommendations on their Use
  - 3.8.1. Classification
  - 3.8.2. Mechanism of Action
  - 3.8.3. Antimicrobial Spectrum
  - 3.8.4. Pharmacokinetics and Pharmacodynamics
  - 3.8.5. Therapeutic Uses
  - 3.8.6. Adverse Effects
  - 3.8.7. Presentation and Dosage
- 3.9. Streptogramins
  - 3.9.1. Classification
  - 3.9.2. Mechanism of Action
  - 3.9.3. Antimicrobial Spectrum
  - 3.9.4. Pharmacokinetics and Pharmacodynamics
  - 3.9.5. Therapeutic Uses
  - 3.9.6. Adverse Effects
  - 3.9.7. Presentation and Dosage

## Module 4. Antibiotics III

- 4.1. Oxazolinones
  - 4.1.1. Classification
  - 4.1.2. Mechanism of Action
  - 4.1.3. Antimicrobial Spectrum
  - 4.1.4. Pharmacokinetics and Pharmacodynamics
  - 4.1.5. Therapeutic Uses
  - 4.1.6. Adverse Effects
  - 4.1.7. Presentation and Dosage
- 4.2. Sulfas
  - 4.2.1. Classification
  - 4.2.2. Mechanism of Action
  - 4.2.3. Antimicrobial Spectrum
  - 4.2.4. Pharmacokinetics and Pharmacodynamics
  - 4.2.5. Therapeutic Uses
  - 4.2.6. Adverse Effects
  - 4.2.7. Presentation and Dosage

- 4.3. Lincosamides
  - 4.3.1. Classification
  - 4.3.2. Mechanism of Action
  - 4.3.3. Antimicrobial Spectrum
  - 4.3.4. Pharmacokinetics and Pharmacodynamics
  - 4.3.5. Therapeutic Uses
  - 4.3.6. Adverse Effects
  - 4.3.7. Presentation and Dosage
- 4.4. Rifamycins: Practical Use in TB and Other Infections Today
  - 4.4.1. Classification
  - 4.4.2. Mechanism of Action
  - 4.4.3. Antimicrobial Spectrum
  - 4.4.4. Pharmacokinetics and Pharmacodynamics
  - 4.4.5. Therapeutic Uses
  - 4.4.6. Adverse Effects
  - 4.4.7. Presentation and Dosage
- 4.5. Antifolates
  - 4.5.1. Classification
  - 4.5.2. Mechanism of Action
  - 4.5.3. Antimicrobial Spectrum
  - 4.5.4. Pharmacokinetics and Pharmacodynamics
  - 4.5.5. Therapeutic Uses
  - 4.5.6. Adverse Effects
  - 4.5.7. Presentation and Dosage
- 4.6. Antibiotics for Leprosy: Recent Advances
  - 4.6.1. Classification
  - 4.6.2. Mechanism of Action
  - 4.6.3. Antimicrobial Spectrum
  - 4.6.4. Pharmacokinetics and Pharmacodynamics
  - 4.6.5. Therapeutic Uses
  - 4.6.6. Adverse Effects
  - 4.6.7. Presentation and Dosage



- 4.7. Antituberculosis Drugs: Latest Recommendations for their Use
  - 4.7.1. Classification
  - 4.7.2. Mechanism of Action
  - 4.7.3. Antimicrobial Spectrum
  - 4.7.4. Pharmacokinetics and Pharmacodynamics
  - 4.7.5. Therapeutic Uses
  - 4.7.6. Adverse Effects
  - 4.7.7. Presentation and Dosage
- 4.8. Parenteral Antibiotic Use in Outpatients: Latest Recommendations
  - 4.8.1. Main Indications for Parenteral Antibiotics in Outpatients
  - 4.8.2. Monitoring Outpatients Receiving Parenteral Antibiotic Treatment
- 4.9. The Latest on Antibiotics for Multidrug Resistant Bacteria:
  - 4.9.1. Antibiotics for Multidrug-Resistant GramPositive Bacteria
  - 4.9.2. Antibiotics for multi-resistant Gram-negative bacteria

“*Your research can make a difference in the treatment of bacterial infections*”



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 be confronted with multiple simulated clinical cases based on real patients, in which they will have to investigate, establish hypotheses and ultimately, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Pharmacists learn better, more quickly and more sustainably over time.

*With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.*



According to Dr. Gervas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, attempting to recreate the actual conditions in a pharmacist's professional practice.

“

*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Pharmacists who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

Our University is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases.

*Pharmacists will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

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

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

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.



This program offers the best educational material, prepared with professionals in mind:



### Study Material

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

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



### Video Techniques and Procedures

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



### Interactive Summaries

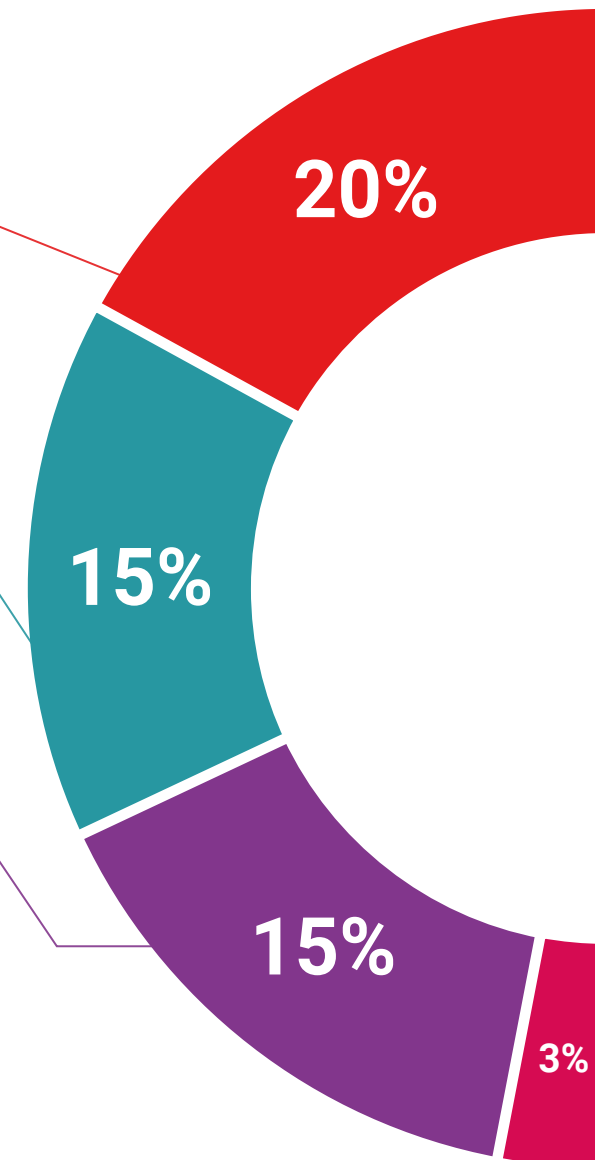
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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



### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.







### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



### Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



06

# Certificate

The Postgraduate Diploma in Antibiotics in the Treatment of Bacterial Infections guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.



“

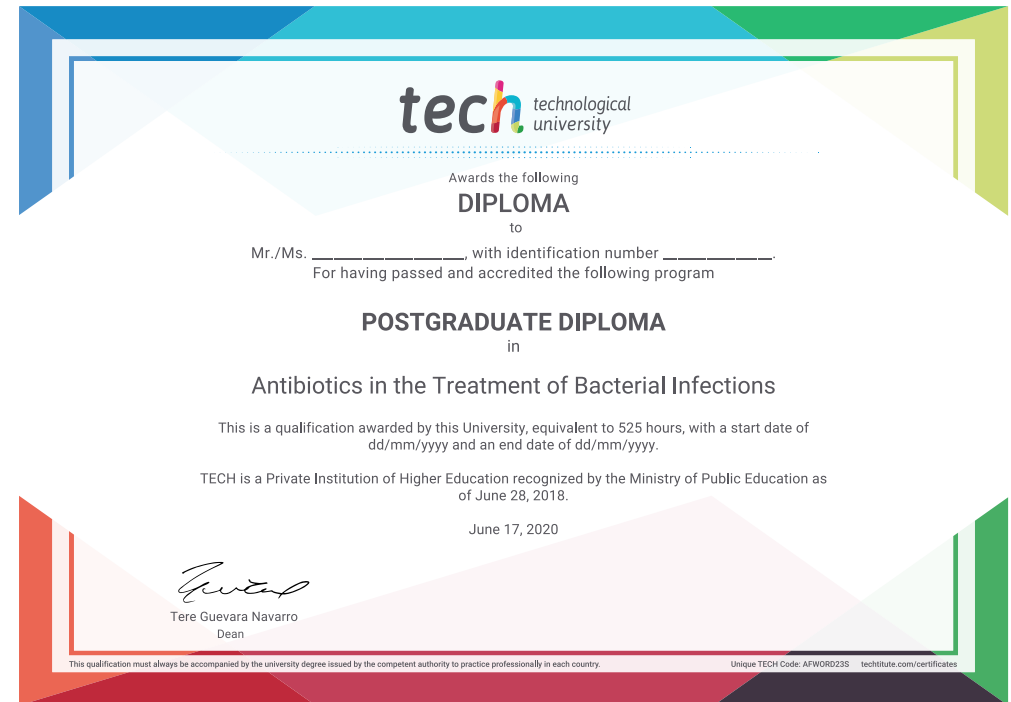
*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*

This **Postgraduate Diploma in Antibiotics in the Treatment of Bacterial Infections** contains the most complete and up-to-date scientific 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 Antibiotics in the Treatment of Bacterial Infections**  
Official N° of Hours: **525 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  
development language  
virtual classroom



**Postgraduate Diploma**  
Antibiotics in the Treatment  
of Bacterial Infections

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Diploma

## Antibiotics in the Treatment of Bacterial Infections

