

# Postgraduate Certificate

## Monitoring and Control of Antimicrobial Use





## Postgraduate Certificate

### Monitoring and Control of Antimicrobial Use

Course Modality: Online

Duration: 6 weeks

Certificate: TECH Technological University

5 ECTS Credits

Teaching Hours: 125 hours.

Website: [www.techtute.com/us/pharmacy/postgraduate-certificate/monitoring-control-antimicrobial-use](http://www.techtute.com/us/pharmacy/postgraduate-certificate/monitoring-control-antimicrobial-use)

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# 01

# Introduction

Antimicrobials are different from other drugs; their efficacy in reducing mortality and morbidity is far superior to that of others. In addition, they are the only drugs that produce microbial resistance, so it is necessary to have professionals who know the doses, the duration of the treatments and the pharmacotherapeutic committees, in order to establish adequate control and follow-up. In this sense, the following program will focus on showing students all the necessary aspects to specialize in this area, allowing them to access new professional opportunities as heads of epidemiological organizations, among others.





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*Want to take your career to the next level?  
Specialize in antimicrobial stewardship  
and become a board member of an  
international organization.”*

The introduction of antimicrobials into clinical practice resulted in a breakthrough for medicine. However, it has been proven that many of them, after some time, cause microorganisms to lose their natural sensitivity to these agents. This makes it necessary to have certain protocols and organizations that direct new studies to prevent this phenomenon from occurring due to the improper or continuous use of these drugs.

For this reason, the following Postgraduate Certificate in Monitoring and Control of Antimicrobial Use will present pharmacists with the latest advances in the field. Thus, the program will begin by discussing the ideal time in which antibiotic treatment should be carried out, taking into account the impact of the most frequent infections.

On the other hand, the policies on the use of antimicrobials and the pharmaceutical committees in charge of implementing them will be presented. It will be equally important to determine hospital strategies for the rational use of these drugs. For all this, the student will be able to take his or her professional career to the next level, actively participating in the board of directors of a hospital, an international organization, among others.

This **Postgraduate Certificate in Monitoring and Control of Antimicrobial Use** contains the most complete and up-to-date Educational 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 eminently practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice.
- ♦ Practical exercises where 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



*Do not hesitate. This new career path will open doors to new opportunities."*

“

*In six weeks you will learn firsthand everything you need to develop new antimicrobial control protocols.”*

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

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive training programmed to train 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 academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*In TECH you will always have the most innovative and current content to continue specializing.*

*Boost your professional profile to become a board member of an international infectious disease organization.*



# 02 Objectives

The main goal of this Postgraduate Certificate will focus on boosting the professional career of pharmacists who aspire to be part of a pharmacotherapeutic committee or head the board of directors of an infectious disease center. Therefore, they will be presented with the most current content on the control and monitoring of the use of antimicrobials, taking into account empirical evidence in this regard.







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*You are one step away from new professional opportunities”.*



## 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.

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*Infectious diseases account for a significant percentage of deaths worldwide”.*





## Specific Objectives

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- ♦ Know the duration of antibiotic treatment to combat infections, using clinical and laboratory parameters
- ♦ Analyze the importance of antimicrobial utilization studies
- ♦ Delve into antimicrobial utilization policies and the current impact on antimicrobial consumption
- ♦ Know the hospital strategies for rational antimicrobial use control

03

# Course Management

The program of this Postgraduate Certificate is supported by the professional and academic experience of the teaching staff. They have worked their careers in countries with a high incidence of bacterial infections, allowing them to access important positions within hospitals and infectious disease centers. For all these reasons, they are more than qualified to help students continue on this career path.





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*This group of professionals has specialized in the sector thanks to their extensive experience in countries with high rates of infectious diseases.”*

## 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
- ♦ Professional 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. 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. Lawrence Carmenate, 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. Luís Dávila, Henry**

- ♦ 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 Héroes del Baire Hospital
- ♦ Medical Science Teaching Award. Cuba

#### **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 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
- ♦ 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

**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. 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

# 04

## Structure and Content

The program of this Postgraduate Certificate in Monitoring and Control of Antimicrobial Use has been designed to provide the latest advances in this subject, focusing on the recommendations, practices and protocols currently in place. In this way, the student will understand the parameters established for the duration of antibiotic therapy, hospital strategies for the rational control of antibiotics and the search for new parameters to avoid antibacterial resistance.





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*This program will help you reach new horizons. Sign up and know all your possibilities”.*

## Module 1. Monitoring and Controlling the Use of Antimicrobials

- 1.1. Antibiotic Treatment Duration in the Treatment of Infections: New Role of Biomarkers
  - 1.1.1. Update on the Adequate Duration of the Most Frequent Infections
  - 1.1.2. Clinical and Laboratory Parameters to Determine the Duration of Treatment.
- 1.2. Antimicrobial Usage Studies: Most Recent Impacts
  - 1.2.1. The Significance of Antimicrobial Usage Studies
  - 1.2.2. Results of Greater Impact in Recent Years by Antimicrobial Usage Studies
- 1.3. Antibiotic Committees in Hospitals: Their Role in the Future
  - 1.3.1. Structure and Operation
  - 1.3.2. Objectives
  - 1.3.3. Activities
  - 1.3.4. Impacts
- 1.4. Antimicrobial Use Policies: Current Impact on Antimicrobial Use.
  - 1.4.1. Concepts
  - 1.4.2. Types of Policies
  - 1.4.3. Objectives
  - 1.4.4. Impacts
- 1.5. Pharmacotherapeutic Committees: Practical Importance
  - 1.5.1. Structure and Function
  - 1.5.2. Objectives
  - 1.5.3. Activities
  - 1.5.4. Impacts
- 1.6. Infectious Disease Specialists and their Role in the Rational Use of Antimicrobials
  - 1.6.1. Functions and Activities of Infectious Disease Specialists to Promote and Encourage the Rational Use of Antimicrobials
- 1.7. Impact of Training and Professional Development on Antimicrobial Usage
  - 1.7.1. Importance of Training and Professional Development





- 1.7.2. Types
- 1.7.3. Impacts
- 1.8. Hospital Strategies for Rational Antimicrobial Use: What the Evidence Says
  - 1.8.1. Hospital Strategies for the Control of the Rational Use of Antimicrobials
  - 1.8.2. Impacts
- 1.9. Scientific Research for the Future Control and Monitoring of Antibiotic Therapy in Patients with Sepsis
  - 1.9.1. Search for New Parameters and Markers for Monitoring and Control of Antibiotic Therapeutics

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*Take the leap to continue to grow your career as a pharmacist by being the new head of a board of directors.”*

05

# Methodology

This training program provides you with a different way of learning. Our methodology uses a cyclical learning approach: ***Re-learning***.

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***.



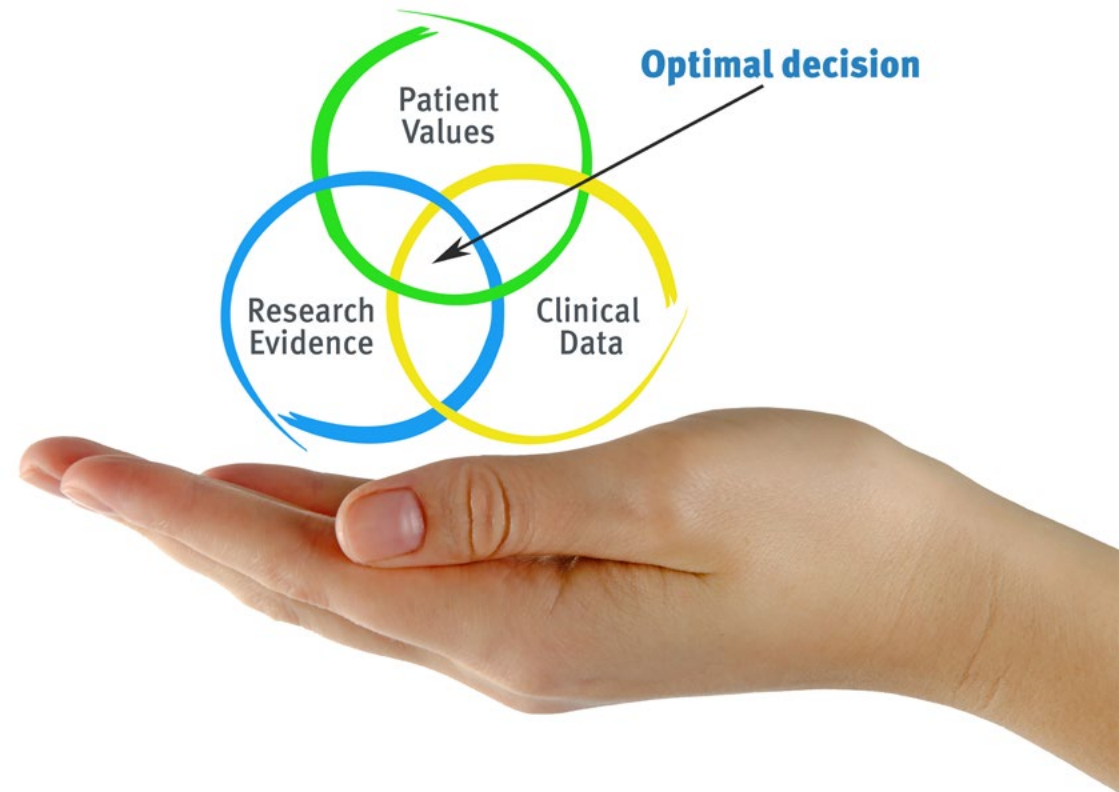


*Discover Re-learning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization".*

## 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 abundant 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.



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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. 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.



## Re-Learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

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 Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking 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.

*Re-learning 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 & Re-testing

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 your goals.



### Classes

There is scientific evidence on the usefulness of learning by observing experts: The system termed Learning from an Expert strengthens knowledge and recall capacity, and generates confidence in the face of difficult decisions in the future.



### Quick Action Guides

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



06

# Certificate

The Postgraduate Certificate in Monitoring and Control of Antimicrobial Use guarantees, in addition to the most rigorous and up-to-date training, access to a Postgraduate certificate issued by TECH Technological University.



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

This **Postgraduate Certificate in Monitoring and Control of Antimicrobial Use** 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 Certificate** issued by **TECH - Technological University via tracked delivery**.

This degree contributes in a relevant way to the development of the continuing education of the professional and provides a high university curricular value to their training, and is 100% valid in all public examinations, professional career and labor exchanges of any Spanish Autonomous Community.

Title: **Postgraduate Certificate in Monitoring and Control of Antimicrobial Use**

ECTS: **5**

Official Number of Hours: **125**



\*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

online training

development language

classroom

**tech** technological  
university

Postgraduate  
Certificate

Monitoring and Control of  
Antimicrobial Use

Course Modality: Online

Duration: 6 weeks

Certificate: TECH Technological University

5 ECTS Credits

Teaching Hours: 125 hours.

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