

# Postgraduate Certificate

## Antibiotics and Antimicrobial Therapies of the Future





## Postgraduate Certificate Antibiotics and Antimicrobial Therapies of the Future

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 4 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/pharmacy/posraduate-certificate/antibiotics-antimicrobial-therapies-future](http://www.techtute.com/us/pharmacy/posraduate-certificate/antibiotics-antimicrobial-therapies-future)

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# 01

# Introduction

The scientific community has long been involved in the fight against bacterial resistance. In addition, different action plans have begun to be implemented to help halt the advance of microorganisms and boost the current antibiotic market. In view of this, it is necessary to have professionals with a vision of the future of this sector and, for this reason, this program will focus on providing students with a theoretical and practical perspective of new antimicrobial therapies. Thus, they will be able to have the necessary knowledge to lead a research committee, be part of a board of directors, among other options of interest.



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*For the scientific community, it is vital to seek new options for effective antimicrobial treatments. Present your proposals thanks to the knowledge you will acquire with this degree”.*

There is currently a consensus on the path that the scientific community should take to develop new drugs. In the world today, there are about 40 drugs under study, of which only three are able to kill 90% of the strains defined as dangerous to public health.

With this in mind, this Postgraduate Certificate in Antibiotics and Antimicrobial Therapies of the Future will focus on providing a different vision that will motivate the student to make new proposals in this area. To this end, a debate will begin on current research and the commercialization of antibiotics by large companies. Then, the most recent clinical trials on antimicrobials will be discussed.

With all the information provided in this program, the student will be able to start building an idea about the new perspective to be implemented in the sector. As a result, you will have access to new career opportunities, whether as part of a research team, as head of a board of directors, or even overseeing the development of current drugs for commercialization.

This **Postgraduate Certificate in Antibiotics and Antimicrobial Therapies of the Future** 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 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
- ♦ Access to content from any fixed or portable device with an Internet connection.



*It takes a major approach toward more precise techniques for antibiotic research."*

“

*Enroll in this Postgraduate Certificate and help change the process of development and research for new antibiotics”.*

The program’s teaching staff includes professionals from 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.

*Specialize now. Start a new career path in a booming sector.*

*Face the new challenges ahead with the content of this program.*



# 02 Objectives

The goal of this Postgraduate Certificate is to provide students with all the knowledge they need to address the debate on new antimicrobial research and therapies. To this end, they will be provided with a series of specific knowledge on the subject, which will help them to increase their chances of accessing new professional opportunities. In this way, they will learn about the latest research and trials in the area, as well as the use that will be made of the old drugs.





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*The debate about the industry's need for new antibiotics has been on the table for some time now. It brings new solutions thanks to this program".*



## 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.





## Specific Objectives

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- ◆ Understand the latest research and the commercialization process for new antibiotics
- ◆ Understand therapeutic targets and new ways to fight infections: what's new in research
- ◆ Analyze the use of other drugs to regulate and stimulate the immune response against infections



*It presents new proposals.  
Oversees new research. Be part  
of the change by enrolling in this  
Postgraduate Certificate".*

03

# Course Management

The program of this Postgraduate Certificate is taught by professionals of high level in the sector, dedicating part of their career to the research and development of new knowledge on antibiotics. For this reason, there are no professionals better prepared to teach this program. In addition, they have the advantage of having performed much of their work in countries where the incidence of infections is high, allowing them to obtain first-hand information on different pathogens.



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*This professional team is trained to provide you with the knowledge you need to be a top-level professional.”*

## 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 of medicine and internal medicine specialty at the Isle of Youth Faculty of Medical Sciences.
- ◆ 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 Héroes 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 specialty 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 contents designed for this Postgraduate Certificate in Antibiotics and Antimicrobial Therapies of the Future have been developed by experts who are familiar with the requirements of the sector. For this reason, they have put all their interest in creating a program that fully complies with them. In this way, they will introduce students to new research in the area and open the debate to express alternatives to the current ones.





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*The bacterial drug resistance crisis has reached its limit. Help to put an end to it by getting to know the new proposals of the experts".*

## Module 1. Antibiotics and Antimicrobial Treatments of the Future

- 1.1. Research, Approval, and Commercialization of New Antibiotics
  - 1.1.1. Antimicrobial Research
  - 1.1.2. Antimicrobial Approval Process
  - 1.1.3. Antimicrobial Marketing and Large Pharmaceutical Companies
- 1.2. Ongoing Clinical Trials for the Approval of New Antibiotics
  - 1.2.1. New Clinical Trials on Antimicrobials
- 1.3. Old Antibiotics with New Uses
  - 1.3.1. The Role of Old Antibiotics with New Uses
  - 1.3.2. Antimicrobial Withdrawal
  - 1.3.3. Chemical Alterations of Old Antimicrobials
- 1.4. Treatment Goals and New Ways to Fight Infections: What's New in Research
  - 1.4.1. New Treatment Goals
  - 1.4.2. New Ways to Treat Sepsis
- 1.5. Monoclonal Antibodies in Infections: Present and Future
  - 1.5.1. Origin and Emergence of Monoclonal Antibodies
  - 1.5.2. Classification
  - 1.5.3. Clinical Uses
  - 1.5.4. Impact Results in Infectious Diseases
- 1.6. Other Drugs to Regulate and Stimulate the Immune Response to Infection: Drugs Under Study
  - 1.6.1. Drugs to Regulate and Control the Immune Response
- 1.7. Futuristic Antibiotics
  - 1.7.1. The Future of Antimicrobials
  - 1.7.2. Antibiotics of the Future





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*The scientific community needs pharmacists like you. By enrolling in this program you will be able to supervise new research.”*

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

This Postgraduate Certificate in Antibiotics and Antimicrobial Therapies of the Future guarantees, in addition to the most rigorous and updated training, access to a Postgraduate Certificate issued by TECH Global University.





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

This program will allow you to obtain your **Postgraduate Certificate in Antimicrobial Therapies of the Future** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Antimicrobial Therapies of the Future**

Modality: **online**

Duration: **6 weeks**

Accreditation: **4 ECTS**



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



future

health

confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

**tech** global  
university

personalized service innovation

knowledge present Therapies of the Future

online training

development languages

classroom

## Postgraduate Certificate Antibiotics and Antimicrobial Therapies of the Future

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 4 ECTS
- » Schedule: at your own pace
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# Postgraduate Certificate

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