# Postgraduate Certificate

## Advances in Antibiotic Resistance

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# Postgraduate Certificate
## Advances in Antibiotic Resistance

- Modality: **online**
- Duration: **6 weeks**
- Certificate: **TECH Technological University**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/pharmacy/postgraduate-certificate/advances-anibiotic-resistance**

# Index

01

# Introduction

It is a fact that, since their invention, antibiotics have saved millions of lives, representing a revolution in medicine. Even so, there is a threat that is increasingly growing, impairing the efficacy of these drugs: bacterial resistance. This is defined as the ability of bacteria to survive drug concentrations that inhibit or kill them. Therefore, research in this field continues to avoid this, requiring pharmaceutical experts who know the effects of different microorganisms and their survival mechanisms.

*Learn about the latest antibiotic resistance control strategies by enrolling in this program".*

The introduction of antibiotics into clinical practice in the 1940s led to a decrease in deaths caused by infections, allowing them to be controlled. In addition, they have significantly revolutionized medicine, favoring the transplantation of solid organs, the survival of premature and immunosuppressed babies, and the adaptation of the body to prosthetic materials, among others.

However, for several years now, all this work has been in jeopardy due to bacterial resistance to antibiotics. Therefore, it is necessary that research in this area continues, as well as the specialization of professionals. Thus, this Postgraduate Certificate has been designed to achieve one goal: to help pharmacists develop more effective drugs over time.

In this regard, the program will cover the known types of resistance, starting with staphylococci, gram-positive and gram-negative germs. All this, taking into account current approaches and clinical implications. New mechanisms of parasitic survival and superbugs will also be studied.

This **Postgraduate Certificate in Advances in Antibiotic Resistance** 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.

*Enroll in this program and start a new stage in your profession as a pharmacist."*

*The world needs pharmacists who are aware of new international measures to combat antibiotic resistance."*

*It studies the evolution of viral and fungal pathogens to develop new drugs.*

*Specialize in antibiotic resistance and face new professional challenges.*

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.

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# Objectives

The objective of this Postgraduate Certificate focuses on providing students with all the knowledge they need to combat bacterial resistance today. To this end, they have an agenda that brings together all the fundamentals on the subject, allowing them to address different resistances and the global plans to combat them. Thanks to this, they will be able to develop independent research to develop new drugs or improve the bacterial resistance of existing ones.

*Learn about the scientific evidence needed to know the latest advances in antibiotic resistance".*

## General Objectives

- 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

- Analyze the antibiotic resistance of infections such as staphylococci, gram-positive and gram-negative germs
- Identify emerging problems of antibiotic resistance of parasites and viruses
- Delve deeper into the new mechanisms of antibiotic resistance and superbugs
- Learn about antibiotic resistance control strategies and global programs to address antibiotic resistance

*Specialize in an area that requires professionals willing to conduct innovative research."*

03

# Course Management

This Postgraduate Certificate is taught by professionals of high level in the sector, so they are qualified to provide the latest Advances in Antibiotic Resistance. In addition, their careers have been devoted, in large part, to research and teaching of these drugs. For all this, they are aware of the needs of the area, being able to develop much better the contents taught in each class.

*Count on professionals acclaimed by the scientific community to specialize in the latest Advances in Antibiotic Resistance".*

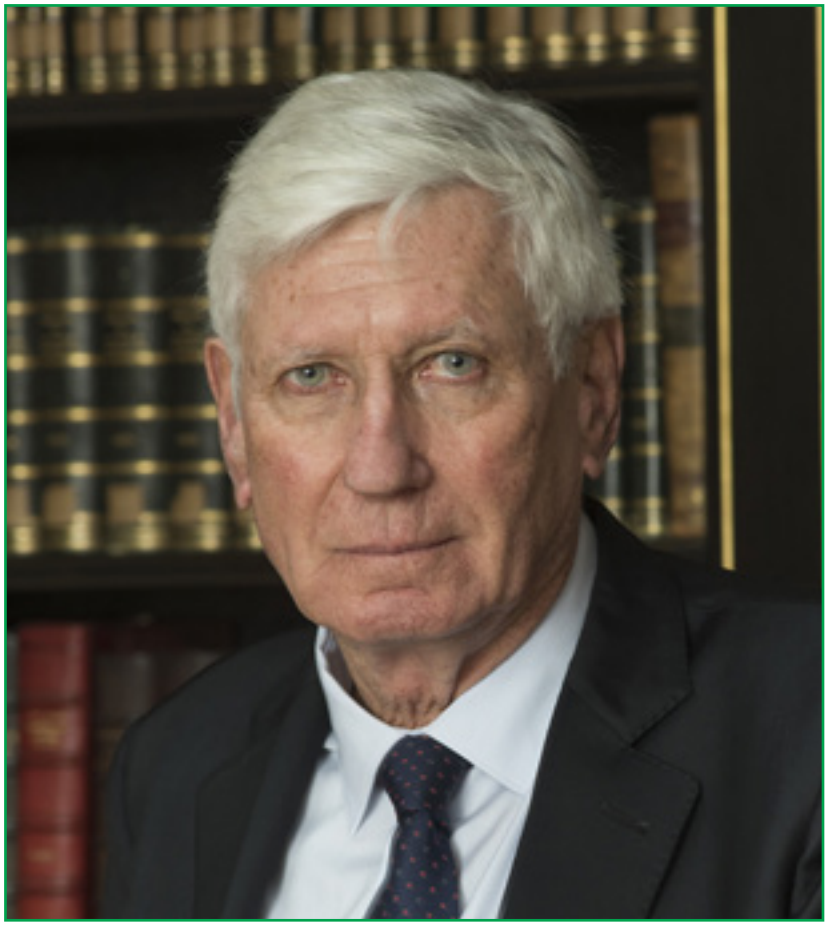
## International Guest Director

Dr. Dominique Franco is a specialist in **liver surgery** and **treatment of hepatocellular carcinoma**, with an extensive background in the field of **regenerative medicine**. Throughout his career, he has focused his research on **cell therapy** for **liver diseases** and **organ bioconstruction**, areas in which he has made innovative contributions. His work focuses on developing new treatment techniques that not only seek to improve the effectiveness of surgical interventions, but also to optimize the quality of life of patients.

He has held leadership roles in several prestigious institutions. **He was Head of the Department of Liver Surgery and Transplantation at the Hôpital Antoine-Béclère**, where he participated in medical milestones such as the first liver transplant performed in Europe. His extensive experience in advanced surgery and transplantation has allowed him to acquire a deep knowledge in the management of complex liver pathologies, becoming a reference in the medical field both nationally and internationally. In addition, he has been **Director Emeritus of Digestive Surgery at the University Paris-Sud,** where he has contributed to the training of new generations of surgeons.

Internationally, he is recognized for his contributions to the development of Regenerative Medicine. In 2014, he founded CellSpace, an association dedicated to promoting **tissue and organ bioengineering** in France, with the aim of bringing together researchers from different disciplines to advance this field.

He has published more than 280 scientific articles in international journals, addressing topics such as Liver Surgery, **hepatocellular carcinoma** and Regenerative Medicine. In addition, he is a member of the U-1193 research unit at Inserm and a consultant at the Institut Pasteur, where he continues his work as a consultant on cutting-edge projects, contributing to expand the **boundaries of medical knowledge in his area of expertise**.



## Dr. Franco, Dominique

- Academic Director of the Institut Pasteur, Paris, France
- Vice President Health Cluster for Physician Competitiveness
- Head of the Digestive Surgery Department at Antoine-Béclère Hospital (APHP)
- Director Emeritus of Digestive Surgery at the University Paris-Sud
- Founder of CellSpace
- Member of the research unit U-1193 of Inserm
- President of the French National Academy of Surgery

*Thanks to TECH, you will be able to learn with the best professionals in the world"*

## 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. Cantalapiedra 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 Advances in Antibiotic Resistance have been proposed by experts who are familiar with the needs of the sector. Therefore, they have placed special emphasis on those aspects required by pharmacists to specialize in the area. In this way, the student will learn about the mechanism of antimicrobial resistance of different pathogens, as well as the measures adopted by international organizations to prevent them.

*This Postgraduate Certificate in Advances in Antibiotic Resistance represents a unique opportunity for pharmacists".*

## **Module 1.** Antibiotic Resistance

1.1. Emergence and Development of Antibiotic Resistance
- 1.1.1. Concept
- 1.1.2. Classification
- 1.1.3. Origins and Development

1.2. Mechanisms of Antibiotic Resistance: An Update
- 1.2.1. Mechanisms of Antimicrobial Resistance
- 1.2.2. New Resistance Mechanisms

1.3. Staphylococcal Resistance: Yesterday, Today, and Tomorrow
- 1.3.1. Evolution of Staphylococcal Resistance
- 1.3.2. Mechanisms of Staphylococcal Resistance

1.4. Resistance of Gram-Positive Germs: Latest Recommendations
- 1.4.1. Evolution and Resistance of GramPositive Germs.
- 1.4.2. Resistance Mechanisms of GramPositive Germs.

1.5. Resistance of Gram-Negative Germs: Current Clinical Implications.
- 1.5.1. Evolution of GramNegative Germ Resistance
- 1.5.2. Resistance Mechanisms of GramNegative Germs

1.6. Virus Resistance
- 1.6.1. Evolution of Virus Resistance
- 1.6.2. Virus Resistance Mechanisms

1.7. Fungal Resistance
- 1.7.1. Evolution of Fungal Resistance
- 1.7.2. Mechanisms of Fungal Resistance



1.8. Parasite Resistance: An Emerging Problem
  1.8.1. Evolution of Parasite Resistance
  1.8.2. Mechanisms of Parasite Resistance
  1.8.3. Resistance to Antimalarials
1.9. New Mechanisms of Antibiotic Resistance and Superbugs
  1.9.1. Emergence and Progression of Superbugs
  1.9.2. New Resistance Mechanisms of Superbugs
1.10. Antibiotic Resistance Control Mechanisms and Programs
  1.10.1. Antibiotic Resistance Control Strategies
  1.10.2. Global Program and International Experiences in the Control of Antibiotic Resistance

*The scientific community needs pharmacists like you. Enroll now and start a new career path".*

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

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

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

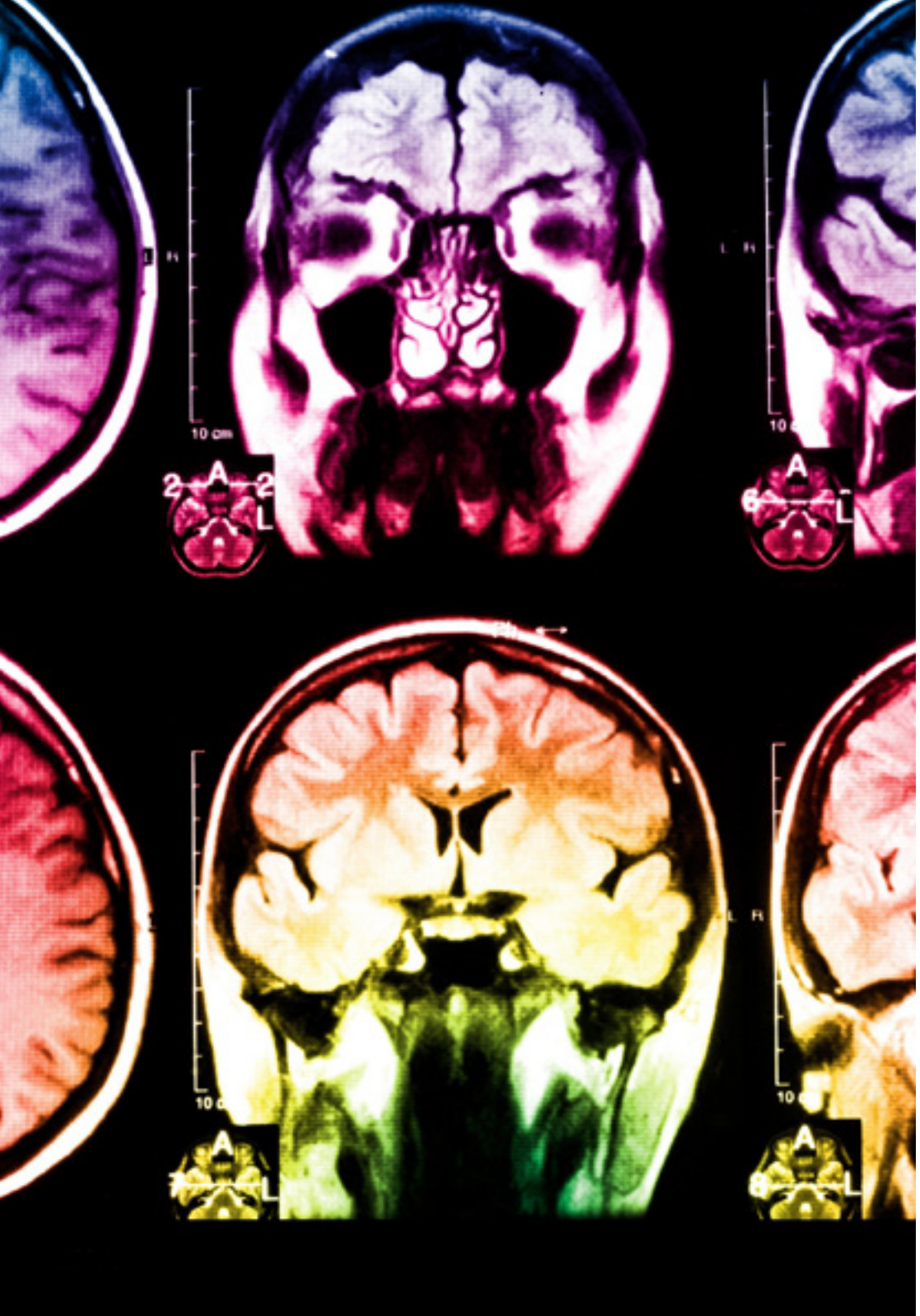
1. Pharmacists who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts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

## 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.

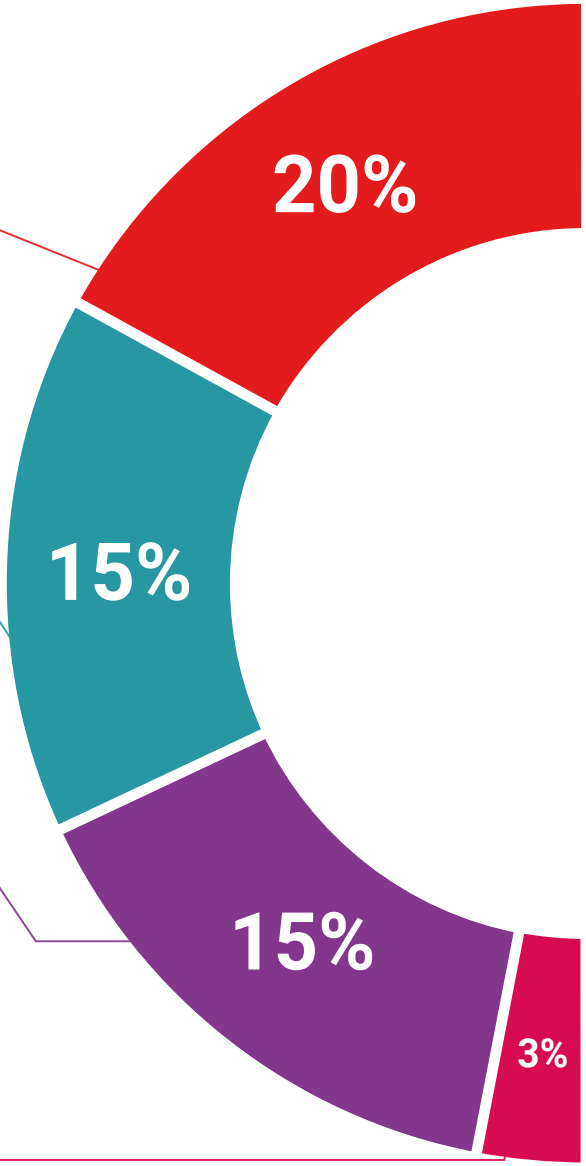
### Interactive Summaries

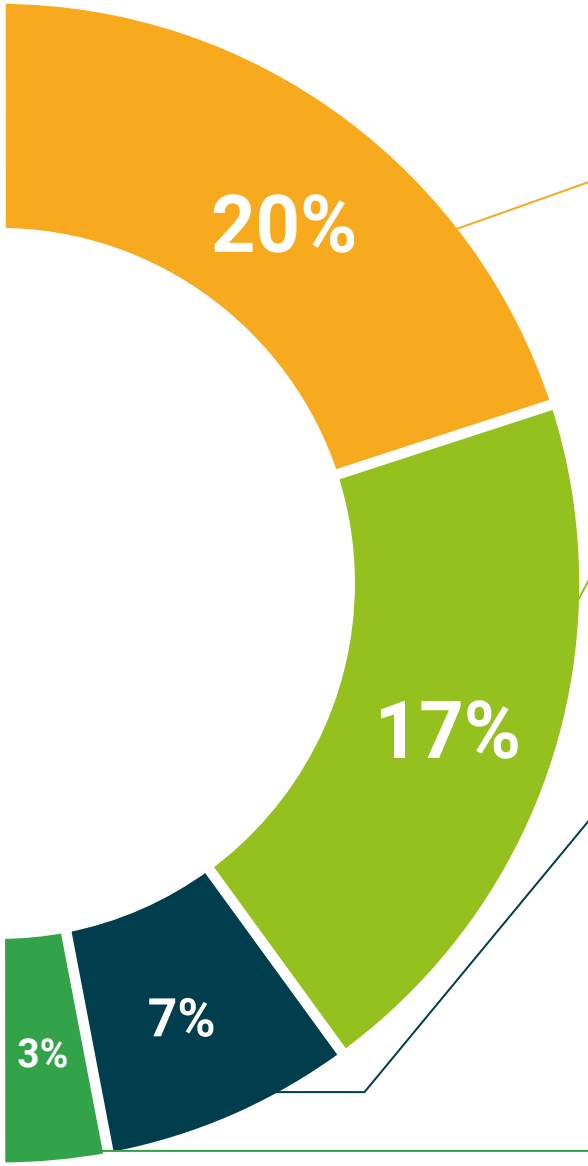
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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 Advances in Antibiotic Resistance guarantees, in addition to the most rigorous and updated training, access to a Postgraduate Certificate issued by TECH Technological University.

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

This Postgraduate **Certificate in Advances in Antibiotic Resistance** 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 Professional Master's Degree Contributes in a Relevant Way to the Development of 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 Advances in Antibiotic Resistance**

Modality: **online**

Duration: **6 weeks**


tech technological university

Awards the following

DIPLOMA

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Advances in Antibiotic Resistance

This is a qualification awarded by this University, with 5 ECTS credits and equivalent to 125 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro

Dean

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

*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.

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