

# Postgraduate Certificate

Microbiological and Clinical  
Diagnosis in Infectious Diseases





## Postgraduate Certificate Microbiological and Clinical Diagnosis in Infectious Diseases

- » Modality: online
- » Duration: 2 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/in/medicine/postgraduate-certificate/microbiological-clinical-diagnosis-infectious-diseases](http://www.techtitute.com/in/medicine/postgraduate-certificate/microbiological-clinical-diagnosis-infectious-diseases)

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# 01

# Introduction

Specialize in Microbiological and Clinical Diagnosis in Infectious Diseases, with this education provided by professionals with extensive experience in the sector. Learn the latest techniques and developments in the field, and you will develop your knowledge and skills in infectious diseases.

A unique opportunity to specialise in a high-demand professional field.



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*With this Postgraduate Certificate you have the opportunity to update your knowledge in a comfortable way and without renouncing the highest scientific standards, incorporate the latest advances in the approach of infectious pathology in your daily medical practice"*

Infectious diseases remain the leading cause of mortality and disability (loss of productive life years) in the world. In 2016, of the total 56.4 million deaths worldwide, 33% were due to infectious diseases, 30% to cardiovascular diseases and 10% to cancer. The fight against disease will have two simultaneous fronts: infectious diseases and chronic non-communicable diseases.

Among the 17.3 million people who died from infections in 2016, the most frequent causes of death were lower respiratory infections (3.7 million), malaria (2.2 million), tuberculosis (1.3 million), diarrhea (1.4 million), and HIV/AIDS infection (1.1 million). The most important factors to take into consideration in relation to infectious diseases are demographics and human behavior, technological and industrial development, economic development and variations in land use, intercontinental travelling and commerce, climate change, microbiotic adaptation and finally the disappearance or reduction of efficient public health measures.

The complex international epidemiological situation so far this century, exemplified by the deliberate release of *Bacillus anthracis* spores as a bioweapon to cause pulmonary anthrax in victims who inhaled them, the emergence of West Nile virus as a pathogen in the United States, the SARS epidemic, the zoonotic spread of monkeypox in the United States, the threat of pandemic influenza, the Ebola epidemic in Africa, the emergence of yellow fever cases in Angola, coupled with the re-emergence of Dengue and Cholera, the emergence of new arboviruses in the Americas region, such as Chikungunya and more recently Zika. Together with morbidity from other endemic infectious diseases, such as HIV/AIDS, leptospirosis, tuberculosis, community-acquired pneumonia and the increase in antibiotic resistance with the development of multidrug-resistant bacteria, all of which highlight the unprecedented need to perfect the process of specialization and improvement of human capital in order to increase the competence and performance of all the personnel necessary to face the challenges involved in controlling and dealing with biological, hospital and public health emergencies that guarantee the quality and safety of health care for the population in any part of the world.

This **Postgraduate Certificate in Microbiological and Clinical Diagnosis in Infectious Diseases** contains the most complete and up-to-date scientific program on the market.

The most important features of the program include:

- ♦ The development of clinical cases presented by experts in The Clinical Method and Scientific Investigation in Infectious Diseases
- ♦ 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
- ♦ New developments in The Clinical Method and Scientific Investigation in Infectious Diseases
- ♦ Practical exercises where self-assessment can be used to improve learning
- ♦ An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course
- ♦ Theoretical lessons, questions for experts, discussion forums on controversial issues and individual reflection work
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



*Don't miss the opportunity to learn about advances in the treatment of infections to incorporate them into your daily medical practice"*

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*This Postgraduate Certificate is the best investment you can make in the selection of a refresher program for two reasons: in addition to updating your knowledge in Microbiological and Clinical Diagnosis in Infectious Diseases, you will obtain a degree from TECH Technological University"*

Its teaching staff is made up of prestigious and renowned professionals with a long history in health care, teaching and research, who have worked in many countries on several continents, developing both their professional and teaching abilities that they deliver in an extraordinary way in this Postgraduate Certificate.

The methodological design of this Postgraduate Certificate has been developed by a multidisciplinary team of e-learning experts and integrates the latest advances in educational technology for the creation of numerous multimedia educational tools that allow the professional, based primarily on the problem-solving method, to face the solution of real problems in their daily clinical practice. This will allow them to advance in the acquisition of knowledge and the development of skills that will impact their future professional work.

It should be noted that each of the contents generated in this Postgraduate Certificate, as well as the videos, self-tests, clinical cases and modular exams have been thoroughly reviewed, updated and integrated by the professors and the team of experts that make up the working group, in order to facilitate a learning process which is didactic and given in a gradual manner that allows the objectives of the teaching program to be achieved.

*This program is the best available in the educational landscape in viral infections.*

*Seize the moment and gain up-to-date knowledge on the management of coronavirus infections.*



# 02

# Objectives

The fundamental purpose of the teaching program is the education and professional development of physicians to achieve a deep theoretical mastery of the latest and most current scientific knowledge in the area of clinical infectious diseases, as well as the development of skills that will allow them to approach the complex health-infectious disease process in individuals and communities with more comfort and safety in practice.





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*This program will provide you with a sense of confidence in your medical practice, which will help you grow personally and professionally”*



## General Objectives

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- Update or deepen your knowledge and develop your skills for daily clinical practice in healthcare, teaching or research roles in the field of infectious diseases in order to provide individual or group population care that allows for the improvement of health indicators
- Improve the medical attention and the overall health of patients with infectious diseases based on integral care, the application of the epidemiological clinical method and the correct use of antimicrobials in correspondence with the most up to date scientific evidence





## Specific Objectives

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- ♦ Understand the organization, structure and operation of the microbiology laboratory
- ♦ Integrate the principles of the use of microbiological tests in patients with infectious pathologies and how to perform the sampling process
- ♦ Correctly perform protocols for virological, bacteriological, mycological and parasitological studies
- ♦ Learn how to properly interpret microbiological studies
- ♦ Understand the concepts of biosecurity and bioterrorism



*Improve the care of your patients by taking advantage of the education that is offered by this Postgraduate Certificate in Microbiological and Clinical Diagnosis in Infectious Diseases"*

03

# Structure and Content

The teaching program has been created by a group of professors and medical professionals from various medical specialties, with extensive medical, research and teaching experience in several countries in Africa, Central and South America, interested in integrating the latest and most modern scientific knowledge of clinical infectious diseases and antimicrobial therapies, to ensure an educational and professional development to improve the daily clinical practice of professionals who care for patients or populations with infectious diseases.





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*This Postgraduate Certificate in Microbiological and Clinical Diagnosis in Infectious Diseases contains the most complete and up-to-date scientific program on the market”*

## Module 1. Microbiological Diagnosis and Other Examinations for Infectious Diseases

- 1.1. Organization, Structure and Functioning of the Microbiology Laboratory
  - 1.1.1. Organization and Structure of the Microbiology Laboratory
  - 1.1.2. Functioning of a Microbiology Laboratory
- 1.2. Principles of the Use of Microbiological Examinations in Patients with Infectious Pathologies The Process of Collecting Specimens
  - 1.2.1. The Role of Microbiological Studies in the Diagnosis of Infectious Diseases
  - 1.2.2. The Microbiological Sampling Process: Preanalytical, Analytical, and Postanalytical Stages
  - 1.2.3. Sampling Requirements for the Main Microbiological Studies used in Daily Clinical Practice: Blood, Urine, Stool, Sputum
- 1.3. Virological Studies
  - 1.3.1. Types of Viruses and Their General Characteristics
  - 1.3.2. General Characteristics of Virological Studies
  - 1.3.3. Viral Culture
  - 1.3.4. Viral Genome Studies
  - 1.3.5. Studies of Antigens and Antibodies Against the Virus
- 1.4. Bacteriological Studies
  - 1.4.1. Classification of Bacteria
  - 1.4.2. General Characteristics of Bacteriological Studies
  - 1.4.3. Stains for Bacterial Identification
  - 1.4.4. The Study of Bacterial Antigens
  - 1.4.5. Cultivation Methods: General and Specific
  - 1.4.6. Bacteria That Need Special Study Methods
- 1.5. Mycological Studies
  - 1.5.1. Classification of Fungi
  - 1.5.2. Main Mycological Studies
- 1.6. Parasitological Studies
  - 1.6.1. Classification of Parasites
  - 1.6.2. Studies for Protozoa
  - 1.6.3. Studies for Helminths



- 1.7. Appropriate Interpretation of Microbiological Studies
  - 1.7.1. The Microbiological Clinical Interrelationship for the Interpretation of Microbiological Studies
- 1.8. Interpreted Reading of the Antibigram
  - 1.8.1. Traditional Interpretation of the Antibigram in Relation to the Sensitivity and Resistance to Antimicrobials
  - 1.8.2. Interpreted Reading of the Antibigram: Current Paradigm
- 1.9. Use of Microbial Map of an Institution
  - 1.9.1. What is a Microbial Map of an Institution?
  - 1.9.2. Clinical Application of the Microbial Map
- 1.10. Biosecurity
  - 1.10.1. Conceptual Definitions of Biosafety
  - 1.10.2. Importance of Biosafety for Health Services
  - 1.10.3. Universal Measures of Precaution
  - 1.10.4. Managing Biological Waste in a Healthcare Institution
- 1.11. The Clinical Laboratory in the Study of Infectious Diseases
  - 1.11.1. Acute Phase Reactants
  - 1.11.2. Studies of Liver Function, Internal Environment, Coagulation and Renal Function in Sepsis
  - 1.11.3. Study of Inflammatory Liquids in the Diagnosis of Infections
  - 1.11.4. Biomarkers Usefulness in Clinical Practice
- 1.12. Imaging Studies for the Diagnosis of Infectious Pathology
  - 1.12.1. The Role of Imaging Studies in the Diagnosis of Infectious Diseases
  - 1.12.2. Ultrasound and its Role in the Comprehensive Evaluation of the Patient with Sepsis
- 1.13. The Role of Genetic and Immunological Studies
  - 1.13.1. Studies of Genetic Illnesses and Their Predisposition of Infectious Diseases
  - 1.13.2. Immunological Studies on Immunosuppressed Patients
- 1.14. Usefulness of Pathological Anatomy Studies
  - 1.14.1. Alterations in Cytological Studies According to the Type of the Biological Agent
  - 1.14.2. Necropsy and Its Importance in Infectious Mortality
- 1.15. Assessment of the Severity of Infectious Diseases
  - 1.15.1. Prognosis Scales in the Care of Patients with Infectious Pathologies Based on Laboratory Studies and Clinical Elements
  - 1.15.2. SOFA Score Usefulness in the Current Day: Components of SOFA, What it Measures Usefulness in the Assessment of a Patient
  - 1.15.3. Main Complications in Infectious Diseases
- 1.16. Worldwide Campaign Against Sepsis
  - 1.16.1. Emergence and Evolution
  - 1.16.2. Objectives
  - 1.16.3. Recommendations and Impact
- 1.17. Bioterrorism
  - 1.17.1. Principle Infectious Agents Used in Bioterrorism
  - 1.17.2. International Regulations on the Management of Biological Samples



*A unique, key, and decisive learning experience to boost your professional development”*

04

# 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.







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

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

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



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

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

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

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



## Relearning Methodology

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

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

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



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

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

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

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

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



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



#### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

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



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



#### Interactive Summaries

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

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

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





#### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



#### Testing & Retesting

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



#### Classes

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



#### Quick Action Guides

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



# 05 Certificate

The Postgraduate Certificate in Microbiological and Clinical Diagnosis in Infectious Diseases guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.





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

This **Postgraduate Certificate in Microbiological and Clinical Diagnosis in Infectious Diseases** 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\*.

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

Title: **Postgraduate Certificate in Microbiological and Clinical Diagnostics in Infectious Diseases**

Official N° of Hours: **200 h.**



\*Apostille Convention. In the event that the student wishes to have their paper certificate 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 languages

virtual classroom

**tech** technological  
university

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