

# Hybrid Professional Master's Degree

## Clinical Infectious Diseases and Advanced Antibiotic Therapeutics



## Hybrid Professional Master's Degree

### Clinical Infectious Diseases and Advanced Antibiotic Therapeutics

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 ECTS Credits

Website: [www.techtitute.com/us/medicine/hybrid-professional-master-degree/hybrid-professional-master-degree-clinical-infectious-diseases-advanced-antibiotic-therapeutics](http://www.techtitute.com/us/medicine/hybrid-professional-master-degree/hybrid-professional-master-degree-clinical-infectious-diseases-advanced-antibiotic-therapeutics)

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# 01

# Introduction

Clinical Infectious Diseases has grown considerably in recent decades giving rise, among other advances, to increasingly precise antibiotic therapeutics. It has also developed treatment, diagnosis and prevention strategies against aggressive pathologies such as HIV and HPV. However, doctors still face the challenge of staying up to date in this regard, as there are no educational programs that comprehensively cover all these innovations. From this context of educational precariousness, this degree has two distinct stages. The first of these includes theoretical learning of the advances in this specialty and is accompanied, in a second phase, by an intensive on-site stay in a center equipped with the best tools to apply all this new knowledge.





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*This program, designed to bring you up to date with Clinical Infectious Diseases, will provide you with the latest theoretical knowledge and practical skills necessary for this field of healthcare”*

The development, in record time, of prophylactic vaccines against the SARS-CoV-2 coronavirus is one of the most significant examples of the scientific advances achieved by Clinical Infectious Diseases in recent years. In addition, this medical branch has contributed to the production of pre- and post-exposure drugs (PrEP and PEP) that prevent the replication of the Human Immunodeficiency Virus (HIV) and its transmission, which was unthinkable at the beginning of this aggressive epidemic. Likewise, from the technological point of view, there are more and more useful and accurate tools for the diagnosis of different pathologies caused by viruses and bacteria. Keeping abreast of all these advances and correctly applying their potential has become a major challenge for medical professionals. This is largely due to the lack of programs that bring together the theoretical content and practical skills required to excel professionally in this field of health.

For this reason, this Hybrid Professional Master's Degree in Clinical Infectious Diseases and Advanced Antibiotic Therapeutics is the definitive answer to the demands for academic improvement in this scientific community. This program brings together, in a first phase, the latest knowledge on respiratory infections, Arbovirosis, zoonotic infections and many other pathologies caused by various pathogens. For its mastery, the specialist will have a 100% online and interactive learning platform. In addition to various academic materials, it will use multimedia resources of great didactic value, including infographics and videos.

Upon completion of the theoretical analysis of these aspects, the doctor will complete a face-to-face and intensive internship in a first level hospital center. During this 3-week hands-on internship, you will approach patients with various pathologies using the most up-to-date techniques based on the most complete scientific evidence. At the same time, you will be supported by an assistant tutor, who will be in charge of supervising your progress and inserting you appropriately in the healthcare dynamics of the health institution. As a result, you will be able to keep up to date with the latest developments in the industry and stand out in the job market for your strong skills and innovative capacity.

This **Hybrid Professional Master's Degree in Clinical Infectious Diseases and Advanced Antibiotic Therapeutics** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ Development of more than 100 clinical cases presented by experts in Clinical 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
- ♦ Assessment and monitoring of patients affected by different pathologies, using the latest clinical practice guidelines
- ♦ Presentation of practical workshops on diagnostic and therapeutic techniques of Clinical Infectious Diseases
- ♦ An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course
- ♦ With a special emphasis on evidence-based medicine and research methodologies in clinical infectious disease specialty care
- ♦ All of this will be complemented by 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
- ♦ Furthermore, you will be able to carry out a clinical internship in one of the best hospital centers

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*With just one click, you will be part of an innovative academic experience that integrates with excellence the most updated knowledge in the field of Clinical Infectious Diseases”*

In this Hybrid The Professional Master's Degree, with a vocational nature and blended learning modality, the program is aimed at updating nursing professionals who demand a high level of qualification. The contents are based on the latest scientific evidence, and oriented in a didactic way to integrate theoretical knowledge in their daily professional practice and, in turn, the theoretical-practical elements will facilitate the updating of knowledge and allow decision making in patient management.

Thanks to their multimedia content developed with the latest educational technology, they will allow the medical professional to obtain situated and contextual learning, which means a simulated environment that will provide immersive learning 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 throughout the program. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Thanks to this program you will master the most updated theoretical considerations in reference to the diagnostic picture of rare pathologies such as Lyme disease, Babesiosis, Rift Valley Fever, among others.*

*Enrolling in this Hybrid Professional Master's Degree is all you need to expand your skills in the control of zoonotic diseases that affect humans.*



02

# Why Study this Hybrid Professional Master's Degree?

Unlike many other curricula, this Hybrid Professional Master's Degree program brings together the most innovative skills and procedures in the field of Clinical Infectious Diseases in an excellent way. The program, devised by TECH, will enable each physician to broaden their theoretical knowledge in this area of health, in accordance with the most modern and international health care trends. You will then apply everything you have learned, in the form of practical skills, during a 3-week intensive on-site internship in a state-of-the-art healthcare institution.







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*TECH will expand your capabilities to implement novel treatments against complete pathologies such as HIV, HPV, among other sexually transmitted infections”*

### **1. Updating from the Latest Technology Available**

This Hybrid Professional Master's Degree in Clinical Infectious Diseases and Advanced Antibiotic Therapeutics is ideal for all those physicians who wish to know in depth the management of the essential technological tools for the diagnosis and treatment of diseases caused by viruses and bacteria. Through this academic modality, you will have access to all its particularities in a theoretical and practical way.

### **2. Gaining In-depth Knowledge from the Experience of Top Specialists**

During this complete program, the specialist will have access to the best experts in Clinical Infectious Diseases. In the first academic phase that integrates this program, you will have access to professors of international prestige. In addition, during the practical stage, they will be supported by the most distinguished professionals, who will be in charge of monitoring their progress and facilitating their mastery of various skills.

### **3. Entering First-Class Clinical Environments**

The specialists, during the professional practices of this program, will have guaranteed access to prestigious medical institutions which, in turn, have been carefully chosen by TECH. These entities have the most innovative clinical resources of the moment, in relation to Infectious Diseases and Advanced Antibiotic Therapeutics. At the same time, the physician will work closely with the best experts in the field.





#### **4. Combining the Best Theory with State-of-the-Art Practice**

Pedagogical programs in Clinical Infectious Diseases rarely pay attention to the practical preparation of professionals. However, this program emphasizes this type of training, as well as the assimilation of the main theoretical developments in the sector. In this way, the specialist will be able to apply the best procedures and skills, from the first moment and with confidence, on real patients.

#### **5. Expanding the Boundaries of Knowledge**

TECH offers the possibility of completing the professional internship of this Hybrid Professional Master's Degree program in centers of international scope. In this way, the physician will be able to expand his frontiers and catch up with the best professionals and in hospitals located in different continents. A unique opportunity that only the world's largest digital university could offer.

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*You will have full practical immersion at the center of your choice”*

# 03 Objectives

Clinical Infectious Diseases currently depends on an up-to-date mastery of therapeutic protocols and highly complex technological diagnostic tools. For this reason, TECH has designed a syllabus, pioneer in its kind, which delves into the theoretical and practical particularities of this area of health. At the same time, it has outlined a series of general and specific objectives that each graduate must meet upon completion of the entire educational process.



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*The design of this curriculum will make it easier for you to meet your career goals, whatever they may be, in the most optimal way possible”*

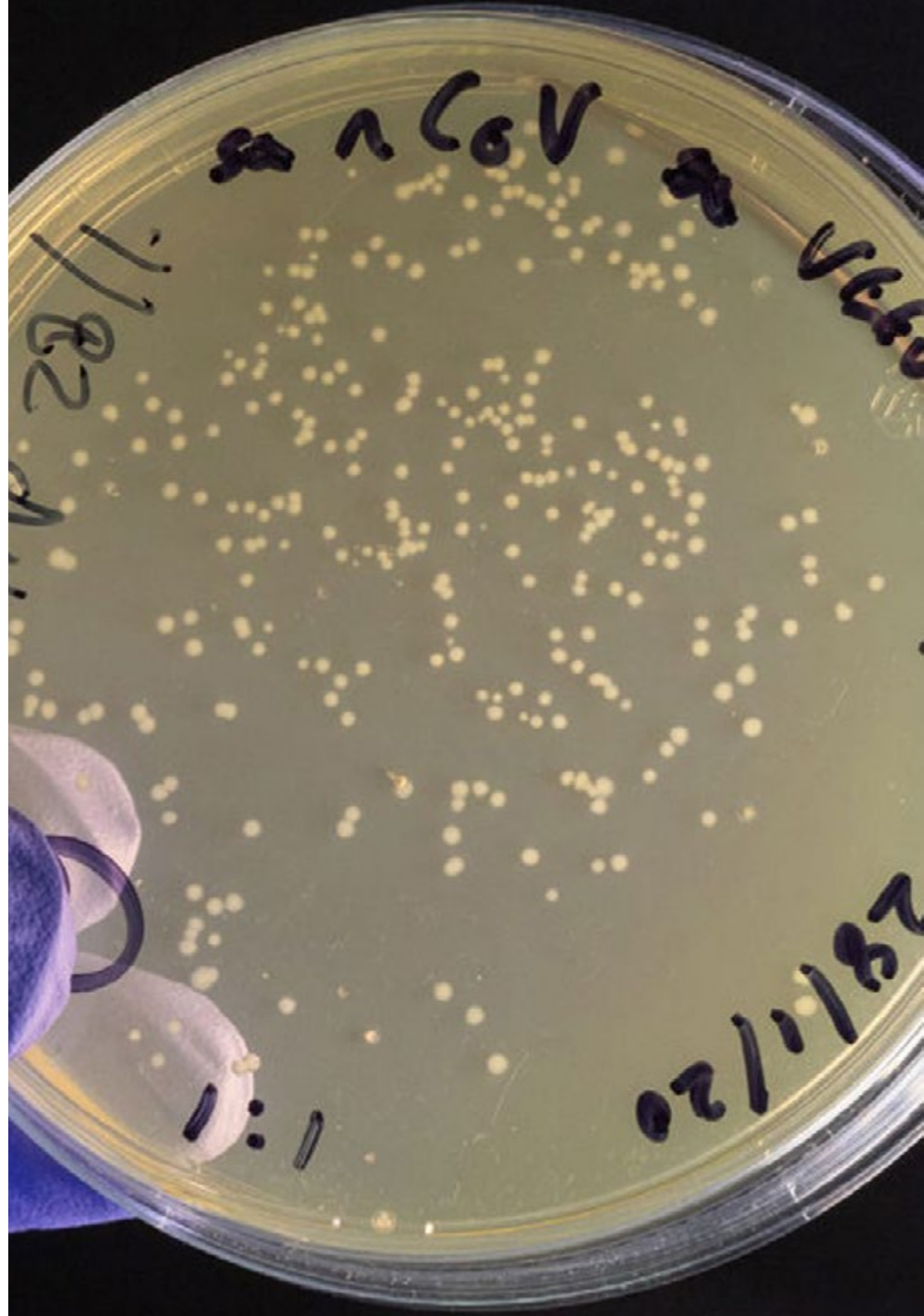


### General Objective

- This Hybrid Professional Master's Degree in Clinical Infectious Diseases and Advanced Antibiotic Therapeutics provides the specialist with the key aspects that currently define this medical field. Therefore, throughout the course, professionals will delve into the management of prevention, diagnosis and treatment of infectious diseases and will acquire advanced competencies to apply all these procedures. In summary, they will get up to date on the theoretical contributions of the specialty and will manage the main practical skills that it demands



*This program is ideal for you if you are looking for a thorough mastery of the main scientific and technological innovations that the field of Clinical Infectious Diseases has developed in recent years"*





## Specific Objectives

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### Module 1. Epidemiology of Infectious Diseases

- ◆ Know the epidemiological, economic, social and political conditions of countries with major infectious diseases
- ◆ Identify the different taxonomies of infectious agents, as well as the properties of microorganisms
- ◆ Gain in-depth knowledge of chemical and physical agents in microorganisms
- ◆ Know the indications and interpretations of a microbiological study, understanding all the technical aspects

### Module 2. Cancer and Immunosuppression

- ◆ Identify the general structures of the immune system
- ◆ Establish the common responses of the immunological system when faced with viral and bacterial infections
- ◆ Explain the complex interrelationships between infections and different types of immunosuppression

### Module 3. Occupational Accident and Blood-borne Pathogens

- ◆ Address the important role of microbiology and the infectologist in the control of infectious diseases
- ◆ Describe the main elements that favour occupational accidents and the transmission of blood-borne pathogens
- ◆ Analyze the diagnostic and therapeutic approach to accidents involving blood

### Module 4. Infectious Diseases in International Travelers

- ◆ Highlight the importance of morbidity and mortality due to infections in international travelers
- ◆ Explain the health controls for international travellers
- ◆ Know and identify the most common infections for international travellers such as "fever on returning from a trip" or traveller's "diarrhoea"

### Module 5. Chronic Non-Communicable Diseases and Infections

- ◆ Study the current pathophysiological elements between non-transmissible chronic diseases and infections
- ◆ Know the neurological, endocrine and immune interrelationships in the face of stress and infectious agents
- ◆ Identify the digestive diseases associated with infectious microorganisms and the function of this system in the body
- ◆ Gain in-depth knowledge on the infectious theory of rheumatic diseases

### Module 6. The Most Lethal Respiratory Infections

- ◆ To delve into the study of the latest clinical, diagnostic and therapeutic elements of the most lethal respiratory infections
- ◆ Know the mortal repercussions of bacterial pneumonia associated with health care and other factors
- ◆ Identify the clinical picture, pathobiology and diagnosis of tuberculosis
- ◆ Analyze the formation of Loeffler syndrome in its pulmonary phase and the clinical manifestations

### **Module 7. Update on Coronavirus Infections**

- ♦ Learn about the progress and evolution of coronaviruses from their discovery to the present day
- ♦ Identify the main microbiological characteristics of coronaviruses
- ♦ Delve into the biosafety protocols currently used in laboratories handling Coronavirus samples
- ♦ Highlight the pathogenesis and pathophysiology of coronavirus infections

### **Module 8. Urinary Tract and Sexually Transmitted Infections**

- ♦ Assess the extent of urinary tract infections and immune response in the genitourinary system
- ♦ Gain detailed knowledge of urinary tract infections in patients with bladder catheterization, prostate and elderly patients
- ♦ Review the latest updates on STIs, as well as the main pathologies of this group according to their classification into viral and bacterial
- ♦ Analyze the current approach to herpes and the therapeutic alternatives that have gained the most popularity among specialists

### **Module 9. Food-Borne Infections**

- ♦ Gain knowledge of diseases transmitted by the consumption and mishandling of food
- ♦ Identify and analyze the classifications of infections caused by improperly handled food
- ♦ Evaluate the main etiological agents such as salmonella, staphylococcus, among others
- ♦ Understand the socio-economic measures taken by ETA to control foodborne infections

### **Module 10. Hepatitis and HIV/AIDS and Tuberculosis Co-Infection**

- ♦ Characterize the clinical picture, viral markers, evolution and treatment of Hepatitis, Tuberculosis and HIV/AIDS infection
- ♦ Understand in detail the clinical manifestations of co-infection at pulmonary and extrapulmonary levels
- ♦ Evaluate the comprehensive care received by patients with infections in patients with co-infection and therapeutic considerations
- ♦ Consider other antituberculosis treatments in patients with tuberculosis/HIV/AIDS coinfection

### **Module 11. Viral Haemorrhagic Diseases and Arboviruses**

- ♦ Quickly identify viral hemorrhagic diseases and the vaccines that target these diseases
- ♦ Be able to understand the diagnostic approach to hemorrhagic diseases
- ♦ Get an overview of the types of hemorrhagic infections that concern the world, such as dengue, chikungunya, zika, among others

### **Module 12. Central Nervous System Infections**

- ♦ Quickly identify the defense mechanisms of the CNS immune system, as well as the epidemiology of the infections that affect it
- ♦ Diagnose possible microbes that cause CNS infections by studying cerebrospinal fluid
- ♦ Identify basic CNS infections by means of their most relevant characteristics such as etiology and clinical picture In addition to the correct diagnosis and treatment
- ♦ Gain a clear understanding of antibiotics and how the blood-brain barrier works



**Module 13. Zoonotic**

- ♦ Know the generalities of zoonoses such as their origin and prion causes
- ♦ Identify and analyze the main control measures for zoonoses of concern to public health systems worldwide
- ♦ Establish an accurate diagnostic picture of some of the infections transmitted by animals, as well as their treatments and clinical pictures

**Module 14. Mycobacteriosis and anaerobic infections**

- ♦ Acquire the skills required to analyze the microbiological characteristics of mycobacteria
- ♦ Analyze microbiological methods to diagnose mycobacterial infections
- ♦ Know and identify the symptoms, infectious agents and clinical picture of mycobacterial infections
- ♦ Know in detail the main antimicrobials used against anaerobic germs

**Module 15. Mycoses and Parasitosis in Infectiology**

- ♦ Be able to identify the etiology of the most common mycosis infections
- ♦ Gain a detailed understanding of the generalities of parasitosis, and the body's immune response to parasites, protozoa and helminths
- ♦ Correctly manage the different direct and indirect diagnostic methods for mycoses
- ♦ Know the latest updates on antiparasitics and their pharmacological components

**Module 16. Multi-Resistance and Vaccines**

- ♦ Identify the acquired genetic mechanisms that lead to antimicrobial resistance
- ♦ Further understanding of the different infections that have developed resistance to antiviral drugs
- ♦ Know the general aspects of vaccination, as well as its immunological basis, its production process and the risk for people
- ♦ Establish the correct method for the use of vaccines

**Module 17. Rare Infectious Diseases and Other Challenges in Infectiology**

- ♦ Know the general aspects of the most common infectious diseases in the world
- ♦ Identify the etiology, clinical picture and diagnosis of the most common diseases in the world
- ♦ Develop the skills required to identify new emerging infectious diseases as well as the development of new antibiotics



*You will learn firsthand the reality of work in the area, in a demanding and rewarding environment”*

# 04 Skills

After passing all the theoretical and practical phases of this program, the doctor will have ample professional facilities for the practice of Clinical Infectious Diseases. All these competencies will be governed by the most updated assistance criteria and, by means of them, they will be able to face complex pathologies and even those of unknown origin.





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*Get up to date on the use of advanced antibiotic and antiretroviral therapies during the theoretical and practical study of this Hybrid Professional Master's Degree”*

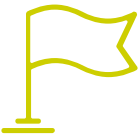


## General Skills

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- ♦ Apply the epidemiological and clinical method in collective or individual care to solve the main health problems related to infectious diseases
- ♦ Perform a critical reading of the scientific literature on these diseases and at the same time have the tools to communicate research results
- ♦ Collect, process, and analyse in very diverse clinical and epidemiological contexts, any scientific information for diagnostic and therapeutic decision-making in the field of clinical infectious diseases specifically and health in general
- ♦ Develop learning to learn as one of the most important skills for any professional nowadays, who is obliged to constantly specialize and improve their professional skills due to the dizzying and fast-paced process of scientific knowledge production
- ♦ Increase their diagnostic and therapeutic capabilities for infectious diseases and their patients' health care in general, through the in-depth study of the epidemiological, clinical, pathophysiological, diagnostic and therapeutic elements of these diseases
- ♦ Refine skills to manage, advise or lead multidisciplinary teams for the study of infectious diseases in communities or individual patients, as well as scientific research teams
- ♦ Develop skills for self-improvement, in addition to being able to provide training and professional improvement activities due to the high level of scientific and professional preparation acquired with this program
- ♦ Educate the population in the field infectious diseases in order to acquire and develop a culture of prevention in the population, based on healthy styles and ways of life





## Specific Skills

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- ♦ Master the biological, epidemiological and social determinants that favor the development of infectious diseases and their impact on morbidity and mortality rates
- ♦ Analyze the latest scientific information on infectious diseases, in order to design plans and programs for their control
- ♦ Apply existing control measures to prevent the transmission of these diseases between countries, in real and/or simulated
- ♦ Evaluate the epidemiological aspects related to infectious diseases that will allow them to exercise actions for the control of the same in the community, under real and/or modeled conditions
- ♦ Identify, in a timely manner, the appearance of new diseases or the rise of emerging or re-emerging diseases, based on the application of the scientific method of the profession
- ♦ Timely diagnosis of the most frequent or new infections based on clinical manifestations for their correct treatment, rehabilitation, and
- ♦ Justify the importance of vaccination as an important public health measure for the control of communicable diseases
- ♦ Determine the occupational, social and environmental risk factors that favor the development of these diseases in the community
- ♦ Detect the main opportunistic infections in patients with different types and degrees of immunosuppression
- ♦ Indicate prevention and control measures to reduce morbidity and mortality due to infectious pathologies
- ♦ Master the clinical, epidemiological, diagnostic, and therapeutic elements for the main epidemiological threats in the world population such as Arbovirosis, HIV/AIDS infection, parasitosis, TB, and hemorrhagic diseases
- ♦ Educate the community in the prevention of the process of infection-disease
- ♦ Identify the fundamental aspects of the pathogenesis and the main clinical features of the diseases studied
- ♦ Halt the progression of antibiotic resistance, based on reasoned treatment and supported by the best scientific evidence
- ♦ Develop skills to provide care for international travelers, based on the mastery of the main risks and diseases in this vulnerable
- ♦ Correctly use and interpret all microbiological studies and other diagnostic resources in the care of their patients

# 05

# Course Management

TECH has assembled a distinguished team of professors for this program. All of them have extensive experience in the approach to infectious pathologies and in the use of modern strategies for their diagnosis and treatment. These experiences have been integrated into the complete syllabus of this Hybrid Professional Master's Degree program which, in addition to collecting the theoretical developments in this health field, will carry out comparative analysis of clinical cases, by means of a totally personalized didactic guide.





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*TECH teachers have participated in the design of multimedia resources, such as summaries and infographics, which will help you to easily master the theoretical contents of this Hybrid Professional Master's Degree”*

## Management



### Dr. Díaz Pollán, Beatriz

- ♦ Internal medicine specialist with experience in infectious diseases
- ♦ FEA, Department of Internal Medicine, Infectious Diseases Unit, Hospital Universitario La Paz, Madrid
- ♦ Associate Doctor of the Department of Internal Medicine, Infectious Diseases Unit, Hospital San Carlos
- ♦ Associate researcher in several research projects
- ♦ Author of dozens of scientific articles on infectious diseases
- ♦ Professional Master's Degree in Infectious Diseases and Antimicrobial Treatment from CEU Cardenal Herrera University
- ♦ Specialist in community and non-communicable infections by CEU Cardenal Herrera
- ♦ Specialist in Chronic Infectious Diseases and Imported Infectious Diseases by CEU Cardenal Herrera
- ♦ Member of the Spanish Society of Infectious Diseases and Clinical Microbiology

## Professors

### Dr. Loeches Yagüe, María Belén

- ♦ Assistant Doctor of the Infectious Diseases Unit of the Department of Infectious Diseases at the Hospital General Universitario La Paz, Madrid
- ♦ Doctorate in Medicine from the Autonomous University Madrid
- ♦ Degree in Medicine from the Complutense University of Madrid
- ♦ Master in Theoretical and Practical Learning in Infectious Diseases from the Complutense University of Madrid
- ♦ Specialized Training in Microbiology and Infectious Diseases at the Hospital General Universitario Gregorio Marañón, Madrid
- ♦ Professor of Infectious Diseases at the Hospital Universitario Infanta Sofía, Madrid, Spain Sofía University Hospital, Madrid

### Dr. Ramos Ramos, Juan Carlos

- ♦ Internal Medicine Specialist
- ♦ Assistant Doctor at the Infectious Diseases Unit of the Hospital Universitario La Paz, Madrid
- ♦ Internist at Hospital Universitario Sanitas La Zarzuela, Madrid
- ♦ PhD in Medicine and Surgery from the University of Alcalá de Henares
- ♦ Professional Master's Degree in Medicine and Surgery, Universidad de Alcalá de Henares, Madrid



**Dr. Rico Nieto, Alicia**

- ♦ Specialist in Microbiology and Parasitology and Expert in Infectious Diseases
- ♦ Assistant Doctor at the Infectious Diseases Unit of the Hospital Universitario La Paz, Madrid
- ♦ Specialist in Microbiology at Hospital Universitario La Paz, Madrid
- ♦ Researcher at the Research Institute of the Hospital Universitario La Paz, Madrid
- ♦ Author of numerous scientific publications
- ♦ Member of: Board of Directors of the Osteoarticular Infection Study Group, Spanish Society of Infectious Diseases and Clinical Microbiology

**Dr. Arribas López, José Ramón**

- ♦ Department Head of the Infectious Diseases and Clinical Microbiology Unit at the Hospital Universitario La Paz
- ♦ Coordinator of the High Level Isolation Unit at the Hospital La Paz - Carlos III
- ♦ Director of the Research Institute of Hospital Universitario la Paz (IdiPAZ)
- ♦ Director of the Hospital Universitario la Paz Foundation
- ♦ Doctor in the Infectious Diseases Unit of Barnes Hospital in the USA
- ♦ Doctor of Medicine, UAM
- ♦ Member of the Inter-Ministerial Committee for the Management of the Ebola Crisis

**Dr. Mora Rillo, Marta**

- ♦ Internal Medicine Specialist at the Hospital Universitario La Paz, Madrid
- ♦ Researcher in Infectious Diseases
- ♦ Author of several scientific articles on Infectious Diseases
- ♦ Teaching collaborator in university studies of Medicine
- ♦ Doctorate in Medicine from the Autonomous University Madrid
- ♦ Professional Master's Degree in Infectious Diseases in Intensive Care by the University of Valencia
- ♦ Master's Degree in Tropical and Health Medicine, Autonomous University of Madrid
- ♦ Postgraduate Diploma in Emerging and High Risk Virus Pathology, Universidad Autónoma de Madrid



*Receive a first class teaching guide from a faculty that is widely qualified for the modern and effective practice of Clinical Infectious Diseases”*

# 06

## Educational Plan

The syllabus of this Hybrid Professional Master's Degree program consists of several academic modules where the specialist will find the latest topics related to bacterial and viral infections. From these topics, they will update their knowledge regarding respiratory, dermatological, chronic non-communicable infections, Arbovirolosis, among other pathologies. In addition, you will delve into the use of modern therapeutic strategies to curb the impact of these diseases. Finally, it will explore the latest scientific discoveries on the resistance of some pathogens to specific pharmacological products such as antibiotics. All these contents will be presented by means of methodologies of great didactic value such as Relearning.





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*From a 100% online learning platform, TECH will provide you with access to the main novelties in the field of Clinical Infectious Diseases”*

## Module 1. Epidemiology of Infectious Diseases

- 1.1. Epidemiological, Economic and Social Conditions by Continent that Favor the Emergence of Infectious Diseases
  - 1.1.1. Africa:
  - 1.1.2. America:
  - 1.1.3. Europe and Asia
- 1.2. New and Emerging Diseases By Continent
  - 1.2.1. Morbidity and Mortality From Infectious Diseases in Africa
  - 1.2.2. Morbidity and Mortality From Infectious Diseases in the Americas
  - 1.2.3. Infectious Disease Morbidity and Mortality in Asia
  - 1.2.4. Morbidity and Mortality From Infectious Diseases in Europe
- 1.3. The Taxonomy Of Infectious Agents
  - 1.3.1. Viruses
  - 1.3.2. Bacteria
  - 1.3.3. Fungus
  - 1.3.4. Parasites
- 1.4. Disease-producing Properties of Micro-organisms
  - 1.4.1. Mechanisms of Pathogenicity
  - 1.4.2. Mechanisms of Adhesion and Multiplication
  - 1.4.3. Mechanisms Enabling the Acquisition of Nutrients From The Host
  - 1.4.4. Mechanisms Inhibiting The Phagocytic Process
  - 1.4.5. Mechanisms For Evading The Immune Response
- 1.5. Microscopy and Staining
  - 1.5.1. Microscopes and Types of Microscopes
  - 1.5.2. Composite Stains
  - 1.5.3. Acid-fast Micro-organism Stainings
  - 1.5.4. Staining to Demonstrate Cellular Structures
- 1.6. Cultures and Growth of Micro-organisms
  - 1.6.1. General Culture Mediums
  - 1.6.2. Specific Culture Methods

- 1.7. Effect of Chemical and Physical Agents on Micro-organisms
  - 1.7.1. Sterilisation and Disinfection
  - 1.7.2. Disinfectants and Antiseptics Used in Practice
- 1.8. Molecular Biology and its Importance for the Infectologist
  - 1.8.1. Bacterial Genetics
  - 1.8.2. Polymerase Chain Reaction Tests
- 1.9. Indication and Interpretation of Microbiological Studies

## Module 2. Cancer and Immunosuppression

- 2.1. The Innate and Adaptive Immune Response
  - 2.1.1. Cells and Cytokines in Response to Infectious Agents
  - 2.1.2. Characteristics of the Innate Immune Response
- 2.2. Immunosuppression in Different Conditions in Patients with Sepsis
  - 2.2.1. The role of Cytotoxics in Immunosuppression
  - 2.2.2. The role of Cytotoxics in Immunosuppression
  - 2.2.3. Infection in Transplant Patients
- 2.3. The Oncohematological Patient with Sepsis
  - 2.3.1. Medullary Aplasia
  - 2.3.2. Neutropenia
  - 2.3.3. Infections in Patients with Cancer
- 2.4. The Diabetic Patient with Sepsis
  - 2.4.1. The Immune System in Diabetes *Mellitus*
  - 2.4.2. Main Infections in the Diabetic Patient
- 2.5. Comprehensive Approach to the Immuno-Compromised Patient with Sepsis
  - 2.5.1. Diagnostic Considerations
  - 2.5.2. Therapeutic Measures
- 2.6. The Link Between Cancer and Micro-organisms
  - 2.6.1. Oncogenesis and Infection
  - 2.6.2. Virus and Cancer
    - 2.6.2.1. Epstein-Barr Virus
    - 2.6.2.2. Hepatitis B and C Viruses
    - 2.6.2.3. Human Immunodeficiency Virus
    - 2.6.2.4. T-cell Lymphoma/Leukaemia Viruses
    - 2.6.2.5. Kaposi's Sarcoma-Associated Herpesvirus

- 2.7. Bacterias and Cancer
  - 2.7.1. Helicobacter Pylori
- 2.8. Parasites and Cancer
  - 2.8.1. Schistosoma Haematobium
  - 2.8.2. Opisthorchis Viverrini
- 2.9. Bacteria Allies Against Cancer

### Module 3. Occupational Accident and Blood-borne Pathogens

- 3.1. Epidemiology of Blood Borne Pathogen Infections
- 3.2. Main Blood-Borne Infections
  - 3.2.1. Hepatitis B Virus Infection
  - 3.2.2. Hepatitis C Virus Infection
  - 3.2.3. HIV/AIDS
- 3.3. Diagnostic and Therapeutic approach to Accidents Involving Blood
  - 3.3.1. Diagnostic Follow-up of Cases
  - 3.3.2. Treatment
- 3.4. Universal Precautions in the Prevention of Accidents in the Workplace
- 3.5. Biosafety Measures and the Role of the Epidemiologist in Reducing Biohazards
  - 3.5.1. Biological Risk
  - 3.5.2. Biosecurity

### Module 4. Infectious Diseases in International Travelers

- 4.1. Vaccines in the International Traveller
  - 4.1.1. Vaccines in the International Traveller
  - 4.1.2. Vaccination Against Yellow Fever
- 4.2. Prophylaxis for Travellers to Tropical Areas
  - 4.2.1. Pharmacological Treatment According to the Geographical Area to be visited
  - 4.2.2. Glucose-6-Phosphate Dehydrogenase Deficiency and Antimalarial Drugs
  - 4.2.3. Preventive Measures for Travellers in Tropical Areas

- 4.3. Traveller's Diarrhoea
  - 4.3.1. Epidemiology
  - 4.3.2. Etiology
  - 4.3.3. Clinical Manifestations
  - 4.3.4. Diagnosis
  - 4.3.5. Treatment
- 4.4. Health Screening of International Travellers
- 4.5. Fever on Return from International Travel
  - 4.5.1. Main Aetiologies
  - 4.5.2. Diagnostic Approach
  - 4.5.3. Imported Infectious Pathology in the International Traveller

### Module 5. Chronic Non-Communicable Diseases and Infections

- 5.1. Infections and the Chronic Inflammatory Response
  - 5.1.1. Immune System Cells of the Chronic Inflammatory Response to Infections
  - 5.1.2. The Granulomatous Response and Delayed-type Hypersensitivity
  - 5.1.3. The Role of Chemical Mediators of the Chronic Inflammatory Response
- 5.2. Stress, Immunity and Infectious Agents
  - 5.2.1. Neurological, Endocrine and Immune Interrelationships
  - 5.2.2. Stress and the Immune Response
  - 5.2.3. Chronic Fatigue Syndrome and Infections
- 5.3. Atherosclerosis, Cardiovascular Disease and the Role of Infectious Agents
  - 5.3.1. The Role of Infectious Agents in Atherosclerosis
  - 5.3.2. Cardiovascular Disease Mortality and its Association with Infectious Agents
  - 5.3.3. Cardiovascular Mortality in Patients with Pneumonia
- 5.4. Digestive Diseases Associated with Infectious Microorganisms
  - 5.4.1. Gut Flora and its Important Functions
  - 5.4.2. Gastrointestinal Peptic Ulcer Disease and Helicobacter Pylori
  - 5.4.3. Inflammatory Bowel Disease and Infections
  - 5.4.4. Whipple's Disease

- 5.5. Neurological Diseases and Infections
  - 5.5.1. Dementia and Infections
  - 5.5.2. Multiple Sclerosis and its Relationship to Certain Infectious Agents
  - 5.5.3. Guillain-Barré Syndrome, Immunity and Viral Infections
  - 5.5.4. Parkinson's Disease and its Association With Infections
- 5.6. Endocrinopathies and Infections
  - 5.6.1. Diabetes *Mellitus* and Infections
  - 5.6.2. Chronic Thyroiditis and Infections
- 5.7. The Infectious Theory of Rheumatic Diseases
  - 5.7.1. Rheumatoid Arthritis
  - 5.7.2. Systemic Lupus Erythematosus
  - 5.7.3. Seronegative Spondyloarthropathies
  - 5.7.4. Wegener's Granulomatosis
  - 5.7.5. Polymyalgia Rheumatica

## Module 6. The Most Lethal Respiratory Infections

- 6.1. Immunology and Defence Mechanisms of the Respiratory System
- 6.2. Influenza and Other Lethal Viral Infections
  - 6.2.1. Influenza Epidemics
  - 6.2.2. H1N1 Influenza
  - 6.2.3. Vaccine Against Influenza and the Prevention of Mortality
- 6.3. Bacterial Pneumonia: The Captain of the Armies of Death
  - 6.3.1. Community-Acquired Pneumonia (CAP)
  - 6.3.2. Intrahospital Pneumonia
  - 6.3.3. Pneumonia Associated With Healthcare
- 6.4. Tuberculosis
  - 6.4.1. Epidemiology
  - 6.4.2. Pathobiology
  - 6.4.3. Classification
  - 6.4.4. Clinical Picture
  - 6.4.5. Diagnosis
  - 6.4.6. Treatment

- 6.5. Loeffler's Syndrome and Eosinophilic Syndromes
  - 6.5.1. Pulmonary Phase of Parasites
  - 6.5.2. Clinical and Radiological Manifestations
  - 6.5.3. Other Eosinophilic Pneumonias
- 6.6. Antimicrobials and the Respiratory System
  - 6.6.1. Antimicrobials Effective in the Respiratory System
  - 6.6.2. The Immunomodulatory Role of Macrolides in Pneumonia

## Module 7. Update on Coronavirus Infections

- 7.1. Discovery and Evolution of Coronaviruses
  - 7.1.1. Discovery of Coronaviruses
  - 7.1.2. Global Trends in Coronavirus Infections
- 7.2. Main Microbiological Characteristics and Members of the Coronavirus Family
  - 7.2.1. General Microbiological Characteristics of Coronaviruses
  - 7.2.2. Viral Genome
  - 7.2.3. Principal Virulence Factors
- 7.3. Epidemiological Changes in Coronavirus Infections since its Discovery to Present Day
  - 7.3.1. Morbidity and Mortality of Coronavirus Infections from their Emergence to the Present
- 7.4. The Immune System and Coronavirus Infections
  - 7.4.1. Immunological Mechanisms Involved in the Immune Response to Coronaviruses
  - 7.4.2. Cytokine Storm in Coronavirus Infections and Immunopathology
  - 7.4.3. Modulation of the Immune System in Coronavirus Infections
- 7.5. Pathogenesis and Pathophysiology of Coronavirus Infections
  - 7.5.1. Pathophysiological and Pathogenic Alterations in Coronavirus Infections
  - 7.5.2. Clinical Implications of the Main Pathophysiological Alterations
- 7.6. Risk Groups and Transmission Mechanisms of Coronaviruses
  - 7.6.1. Main Sociodemographic and Epidemiological Characteristics of Risk Groups Affected by Coronavirus
  - 7.6.2. Coronavirus Mechanisms of Transmission
- 7.7. Natural History of Coronavirus Infections
  - 7.7.1. Stages of Coronavirus Infection

- 7.8. Latest Information on Microbiological Diagnosis of Coronavirus Infections
  - 7.8.1. Sample Collection and Shipment
  - 7.8.2. PCR and Sequencing
  - 7.8.3. Serology Testing
  - 7.8.4. Virus Isolation
- 7.9. Current Biosafety Measures in Microbiology Laboratories for Coronavirus Sample Handling
  - 7.9.1. Biosafety Measures for Coronavirus Sample Handling
- 7.10. Up-to-Date Management of Coronavirus Infections
  - 7.10.1. Prevention Measures
  - 7.10.2. Symptomatic Treatment
  - 7.10.3. Antiviral and Antimicrobial Treatment in Coronavirus Infections
  - 7.10.4. Treatment of Severe Clinical Forms
- 7.11. Future Challenges in the Prevention, Diagnosis, and Treatment of Coronavirus
  - 7.11.1. Global Challenges for the Development of Prevention, Diagnostic, and Treatment Strategies for Coronavirus Infections

## Module 8. Urinary Tract and Sexually Transmitted Infections

- 8.1. Epidemiology of Urinary Tract Infection
  - 8.1.1. Factors Explaining the Increased Morbidity of Urinary Tract Infection in Women
- 8.2. Immunology of the Urinary System
- 8.3. Classification of Urinary Tract Infection
- 8.4. Urinary Infection
  - 8.4.1. Etiology
  - 8.4.2. Clinical Picture
  - 8.4.3. Diagnosis
  - 8.4.4. Treatment
- 8.5. Urinary Tract Infection in the Bladder Catheterised, Prostatic and Elderly Patient
- 8.6. Most commonly used antimicrobials in urinary tract infections
  - 8.6.1. Pharmacological Elements
  - 8.6.2. Antimicrobial Resistance of the Main Bacteria Affecting the Urinary Tract
- 8.7. Epidemiological Update on Major STIs

- 8.8. Viral STIs
  - 8.8.1. Perinatal Herpes Simplex
  - 8.8.2. Viral Hepatitis
  - 8.8.3. Human papillomavirus
  - 8.8.4. HIV
- 8.9. Bacterial STIs
  - 8.9.1. Gonorrhoea
  - 8.9.2. Syphilis
  - 8.9.3. Soft Chancre
  - 8.9.4. Lymphogranuloma Venereum
- 8.10. Trichomoniasis and Genital Candidiasis
- 8.11. Trichomoniasis: Epidemiology, Aetiology, Clinical Picture, Diagnosis and Treatment
- 8.12. Genital Candidiasis: Epidemiology, Etiology, Clinical Picture, Diagnosis and Treatment
- 8.13. The syndromic Approach to STIs and Control Measures
  - 8.13.1. Main Clinical Framework
  - 8.13.2. STI Control Measures
- 8.14. Multidrug-Resistant Gonococcus: Treatment Alternatives
  - 8.14.1. Global Situation
  - 8.14.2. Alternative Treatments
- 8.15. Current Management of Recurrent Herpes Infection
  - 8.15.1. Focus Latest Information of Recurrent Herpes Infection

## Module 9. Food-Borne Infections

- 9.1. Food-Borne Diseases, a Modern Day Health Problem
  - 9.1.1. Epidemiology
  - 9.1.2. Causes of Foodborne Infections
- 9.2. Classification of Foodborne Infections
  - 9.2.1. Intoxications
  - 9.2.2. Infections
  - 9.2.3. Toxi-infections

- 9.3. Main Aetiological Agents
  - 9.3.1. Salmonella
  - 9.3.2. Staphylococci
  - 9.3.3. Listeria Monocytogenes
  - 9.3.4. *Escherichia Coli*, 0157;H7
  - 9.3.5. *Clostridium botulinum*
- 9.4. Foodborne Diseases and their Socio-Economic Impact
  - 9.4.1. Socio-Economic Consequences of the ATS
- 9.5. Main Measures for the Control of Food-Borne Infections
  - 9.5.1. Primary Prevention of ATS
  - 9.5.2. Health Education
  - 9.5.3. State Health Control and ATS

## Module 10. Hepatitis and HIV/AIDS and Tuberculosis Co-Infection

- 10.1. Viral Hepatitis A
  - 10.1.1. Virus Characteristics and Replication Cycle
  - 10.1.2. Clinical Picture
  - 10.1.3. Viral Markers
  - 10.1.4. Evolution and Prognosis
  - 10.1.5. Treatment
- 10.2. Viral Hepatitis B and C
  - 10.2.1. Virus Characteristics and Replication Cycle
  - 10.2.2. Clinical Picture
  - 10.2.3. Viral Markers
  - 10.2.4. Evolution and Prognosis
  - 10.2.5. Treatment
- 10.3. Viral Hepatitis D and E
  - 10.3.1. Virus Characteristics and Replication Cycle
  - 10.3.2. Clinical Picture
  - 10.3.3. Viral Markers
  - 10.3.4. Evolution and Prognosis
  - 10.3.5. Treatment

- 10.4. Epidemiology of Morbidity and Mortality from TB/HIV/AIDS Coinfection
  - 10.4.1. Incidence
  - 10.4.2. Prevalence
  - 10.4.3. Mortality
- 10.5. Pathobiology from TB/HIV/AIDS Coinfection
  - 10.5.1. Pathophysiological Alterations in Co-Infection
  - 10.5.2. Pathological Alterations
- 10.6. Clinical Manifestations of Co-Infection
  - 10.6.1. Clinical Manifestations of Pulmonary TB
  - 10.6.2. Clinical Manifestations of Extrapulmonary TB
- 10.7. Diagnosis of Tuberculosis in Patients Living with HIV/AIDS
  - 10.7.1. Diagnostic Studies in Pulmonary TB in HIV/AIDS Patients
  - 10.7.2. Diagnostic Studies in Pulmonary TB in HIV/AIDS Patients
- 10.8. Integral Care of Patients with Co-infection TB and HIV/AIDS and Therapeutic Considerations
  - 10.8.1. The System of Comprehensive Care for TB/HIV/AIDS Patients
  - 10.8.2. Anti-Tuberculosis Treatment Considerations in Patients with TB/HIV/AIDS Co-Infection
  - 10.8.3. Anti-Tuberculosis Treatment Considerations in Patients with TB/HIV/AIDS Co-Infection
  - 10.8.4. The Issue of Anti-Tuberculosis and Anti-Retroviral Resistance in These Patients

## Module 11. Viral Haemorrhagic Diseases and Arboviruses

- 11.1. Viral Hemorrhagic Diseases
  - 11.1.1. Epidemiology
  - 11.1.2. Classification
  - 11.1.3. Diagnostic Approach to Viral Haemorrhagic Diseases
  - 11.1.4. The Development of Vaccines for New Diseases
  - 11.1.5. Measures for the Control of Viral Haemorrhagic Diseases
- 11.2. Ebola Haemorrhagic Fever
  - 11.2.1. Characteristics and Replicative Cycle of the Virus
  - 11.2.2. Clinical Picture
  - 11.2.3. Diagnosis
  - 11.2.4. Treatment



- 11.3. South American Hemorrhagic Fevers
  - 11.3.1. Characteristics and Replicative Cycle of the Virus
  - 11.3.2. Clinical Picture
  - 11.3.3. Diagnosis
  - 11.3.4. Treatment
- 11.4. Arbovirus:
  - 11.4.1. Epidemiology
  - 11.4.2. Vector Control
  - 11.4.3. Other Arboviruses
- 11.5. Yellow fever
  - 11.5.1. Concept
  - 11.5.2. Replicative Cycle of the Virus
  - 11.5.3. Clinical Manifestations
  - 11.5.4. Diagnosis
  - 11.5.5. Treatment
- 11.6. Dengue
  - 11.6.1. Concept
  - 11.6.2. Replicative Cycle of the Virus
  - 11.6.3. Clinical Manifestations
  - 11.6.4. Diagnosis
  - 11.6.5. Treatment
- 11.7. Chikungunya
  - 11.7.1. Concept
  - 11.7.2. Replicative Cycle of the Virus
  - 11.7.3. Clinical Manifestations
  - 11.7.4. Diagnosis
  - 11.7.5. Treatment
- 11.8. Zika
  - 11.8.1. Concept
  - 11.8.2. Replicative Cycle of the Virus
  - 11.8.3. Clinical Manifestations
  - 11.8.4. Diagnosis
  - 11.8.5. Treatment

## Module 12. Central Nervous System Infections

- 12.1. The Immune Defence Mechanisms of the CNS
  - 12.1.1. Defence Mechanisms of the CNS
  - 12.1.2. The Immune Response in the CNS
- 12.2. Epidemiology of the CNS Infection
  - 12.2.1. Morbidity
  - 12.2.2. Mortality
  - 12.2.3. Risk Factors
- 12.3. Microbiological Diagnosis of the CNS Infection
  - 12.3.1. The Study of Cerebrospinal Fluid
- 12.4. Meningitis
  - 12.4.1. Etiology
  - 12.4.2. Clinical Picture
  - 12.4.3. Diagnosis
  - 12.4.4. Treatment
- 12.5. Encephalitis
  - 12.5.1. Etiology
  - 12.5.2. Clinical Picture
  - 12.5.3. Diagnosis
  - 12.5.4. Treatment
- 12.6. Myelitis
  - 12.6.1. Etiology
  - 12.6.2. Clinical Picture
  - 12.6.3. Diagnosis
  - 12.6.4. Treatment
- 12.7. Antibiotics and the Blood-Brain Barrier
  - 12.7.1. The Role of the Blood-Brain Barrier
  - 12.7.2. The Crossing of the Blood-Brain Barrier by Antibiotics

## Module 13. Zoonotic

- 13.1. Overview of Zoonosis
  - 13.1.1. General Concepts and Epidemiology of Zoonoses
  - 13.1.2. Main Zoonotic Diseases on an International Level
  - 13.1.3. Prion Zoonosis
  - 13.1.4. Prions in the Aetiology of Diseases
  - 13.1.5. Bovine Spongiform Encephalopathy (or mad cow disease)
  - 13.1.6. Main Zoonosis Control Measures
- 13.2. Rabies
  - 13.2.1. Epidemiology
  - 13.2.2. Infectious Agents
  - 13.2.3. Pathobiology
  - 13.2.4. Clinical Picture
  - 13.2.5. Diagnosis
  - 13.2.6. Treatment
- 13.3. Bird Flue
  - 13.3.1. Epidemiology
  - 13.3.2. Infectious Agents
  - 13.3.3. Pathobiology
  - 13.3.4. Clinical Picture
  - 13.3.5. Diagnosis
  - 13.3.6. Treatment
- 13.4. Leptospirosis
  - 13.4.1. Epidemiology
  - 13.4.2. Infectious Agents
  - 13.4.3. Pathobiology
  - 13.4.4. Clinical Picture
  - 13.4.5. Diagnosis
  - 13.4.6. Treatment

- 13.5. Brucellosis
  - 13.5.1. Epidemiology
  - 13.5.2. Infectious Agents
  - 13.5.3. Pathobiology
  - 13.5.4. Clinical Picture
  - 13.5.5. Diagnosis
  - 13.5.6. Treatment
- 13.6. Toxoplasmosis
  - 13.6.1. Epidemiology
- 13.6.2 Infectious Agent
  - 13.6.3. Pathobiology
  - 13.6.4. Clinical Picture
  - 13.6.5. Diagnosis
  - 13.6.6. Treatment

## Module 14. Mycobacteriosis and anaerobic infections

- 14.1. General Overview of Mycobacteriosis
  - 14.1.1. Microbiological Characteristics of Mycobacteria
  - 14.1.2. Immune Response to Mycobacterial Infection
  - 14.1.3. Epidemiology of Major Nontuberculous Mycobacteria Infections
- 14.2. Microbiological Methods for the Diagnosis of Mycobacterioses
  - 14.2.1. Direct Methods
  - 14.2.2. Indirect Methods
- 14.3. Intracellular *Mycobacterium Avium* Infection
  - 14.3.1. Epidemiology
  - 14.3.2. Infectious Agents
  - 14.3.3. Pathobiology
  - 14.3.4. Clinical Picture
  - 14.3.5. Diagnosis
  - 14.3.6. Treatment

- 14.4. *Mycobacterium Kansasii* Infection
    - 14.4.1. Epidemiology
    - 14.4.2. Infectious Agents
    - 14.4.3. Pathobiology
    - 14.4.4. Clinical Picture
    - 14.4.5. Diagnosis
    - 14.4.6. Treatment
  - 14.5. Leprosy
    - 14.5.1. Epidemiology
    - 14.5.2. Infectious Agents
    - 14.5.3. Pathobiology
    - 14.5.4. Clinical Picture
    - 14.5.5. Diagnosis
    - 14.5.6. Treatment
  - 14.6. Other Mycobacteriosis
  - 14.7. Antimycobacterials
    - 14.7.1. Pharmacological Characteristics
    - 14.7.2. Clinical Use
  - 14.8. Microbiological Characteristics of Anaerobic Germs
    - 14.8.1. Microbiological Characteristics of Anaerobic Germs
    - 14.8.2. Microbiological Studies
  - 14.9. Pulmonary Abscess
    - 14.9.1. Definition
    - 14.9.2. Etiology
    - 14.9.3. Clinical Picture
    - 14.9.4. Diagnosis
    - 14.9.5. Treatment
  - 14.10. Intra-Abdominal and Tubo-Ovarian Abscesses
    - 14.10.1. Definition
    - 14.10.2. Etiology
    - 14.10.3. Clinical Picture
    - 14.10.4. Diagnosis
    - 14.10.5. Treatment
  - 14.11. Intracerebral Abscess
    - 14.11.1. Definition
    - 14.11.2. Etiology
    - 14.11.3. Clinical Picture
    - 14.11.4. Diagnosis
    - 14.11.5. Treatment
  - 14.12. Tetanus and Gangrene
    - 14.12.1. Tetanus: Neonatal and Adult
    - 14.12.2. Gangrene: Definition, Aetiology, Clinical picture, Diagnosis, Treatment
  - 14.13. Main Antimicrobials against Anaerobic Germs
    - 14.13.1. Mechanism of Action
    - 14.13.2. Pharmacokinetics
    - 14.13.3. Dose
    - 14.13.4. Introduction
    - 14.13.5. Adverse Effects
- Module 15. Mycoses and Parasitosis in Infectiology**
- 15.1. General Information on Fungi
    - 15.1.1. General Features of Fungi
    - 15.1.2. Immune Response to Fungi
  - 15.2. Diagnostic Methods for Mycoses
    - 15.2.1. Direct Methods
    - 15.2.2. Indirect Methods
  - 15.3. Superficial Mycosis: Tinea and Epidermatophytosis
    - 15.3.1. Definition
    - 15.3.2. Etiology
    - 15.3.3. Clinical Picture
    - 15.3.4. Diagnosis
    - 15.3.5. Treatment
  - 15.4. Deep Mycosis
    - 15.4.1. Cryptococcosis
    - 15.4.2. Histoplasmosis
    - 15.4.3. Aspergillosis
    - 15.4.4. Other Mycosis

- 15.5. Update on Antifungals
  - 15.5.1. Pharmacological Elements
  - 15.5.2. Clinical Use
- 15.6. General overview of parasitic diseases
  - 15.6.1. General Features of Microbiological Parasites
  - 15.6.2. Immune Response to Parasites
  - 15.6.3. Immune Response to Protozoa
  - 15.6.4. Immune Response to Helminths
- 15.7. Diagnostic Methods for Parasites
  - 15.7.1. Diagnostic Methods for Protozoa
  - 15.7.2. Diagnostic Methods for Helminths
- 15.8. Intestinal Parasites
  - 15.8.1. Ascariasis
  - 15.8.2. Oxiuriasis
  - 15.8.3. Hookworm Disease and Necatoriasis
  - 15.8.4. Trichuriasis
- 15.9. Tissue Parasitosis
  - 15.9.1. Malaria
  - 15.9.2. Trypanosomiasis
  - 15.9.3. Schistosomiasis
  - 15.9.4. Leishmaniasis
  - 15.9.5. Filariasis
- 15.10. Update on Antiparasitics
  - 15.10.1. Pharmacological Elements
  - 15.10.2. Clinical Use

## Module 16. Multi-Resistance and Vaccines

- 16.1. The Silent Epidemic of Antibiotic Resistance
  - 16.1.1. Globalisation and Resistance
  - 16.1.2. Change from Susceptible to Resistant of the Microorganisms
- 16.2. The Main Genetic Mechanisms of Antimicrobial Resistance
  - 16.2.1. Describe the Main Mechanisms of Antimicrobial Resistance
  - 16.2.2. Selective Antimicrobial Pressure on Antimicrobial Resistance
- 16.3. Superbugs
  - 16.3.1. Pneumococcus Resistant to Penicillin and Macrolides
  - 16.3.2. Multidrug-Resistant Staphylococci
  - 16.3.3. Resistant Infections in Intensive Care Units (ICUs)
  - 16.3.4. Resistant Urinary Tract Infections
  - 16.3.5. Other Multi-Resistant Microorganisms
- 16.4. Resistant Viruses
  - 16.4.1. HIV
  - 16.4.2. Influenza
  - 16.4.3. Hepatitis Viruses
- 16.5. Multidrug-Resistant Malaria
  - 16.5.1. Chloroquine Resistance
  - 16.5.2. Resistance to Other Antimalarials
- 16.6. The Main Genetic Studies of Antimicrobial Resistance
  - 16.6.1. Interpretation of Resistance Studies
- 16.7. Global Strategies for Reducing Antimicrobial Resistance
  - 16.7.1. The Control of Prescribing Antibiotics
  - 16.7.2. Microbiological Mapping and Clinical Practice Guidelines
- 16.8. Overview of Vaccines
  - 16.8.1. Immunological Basis of Vaccination
  - 16.8.2. The Process of Vaccination Production
  - 16.8.3. Quality Control of Vaccines
  - 16.8.4. Vaccine Safety and Major Adverse Events
  - 16.8.5. Clinical and Epidemiological Studies for Vaccine Approval

- 16.9. The Use of Vaccines
  - 16.9.1. Vaccine-Preventable Diseases and Vaccination Programmes
  - 16.9.2. Global Experiences of the Effectiveness of Vaccination Programmes
  - 16.9.3. Vaccine Candidates for New Diseases

## Module 17. Rare Infectious Diseases and Other Challenges in Infectiology

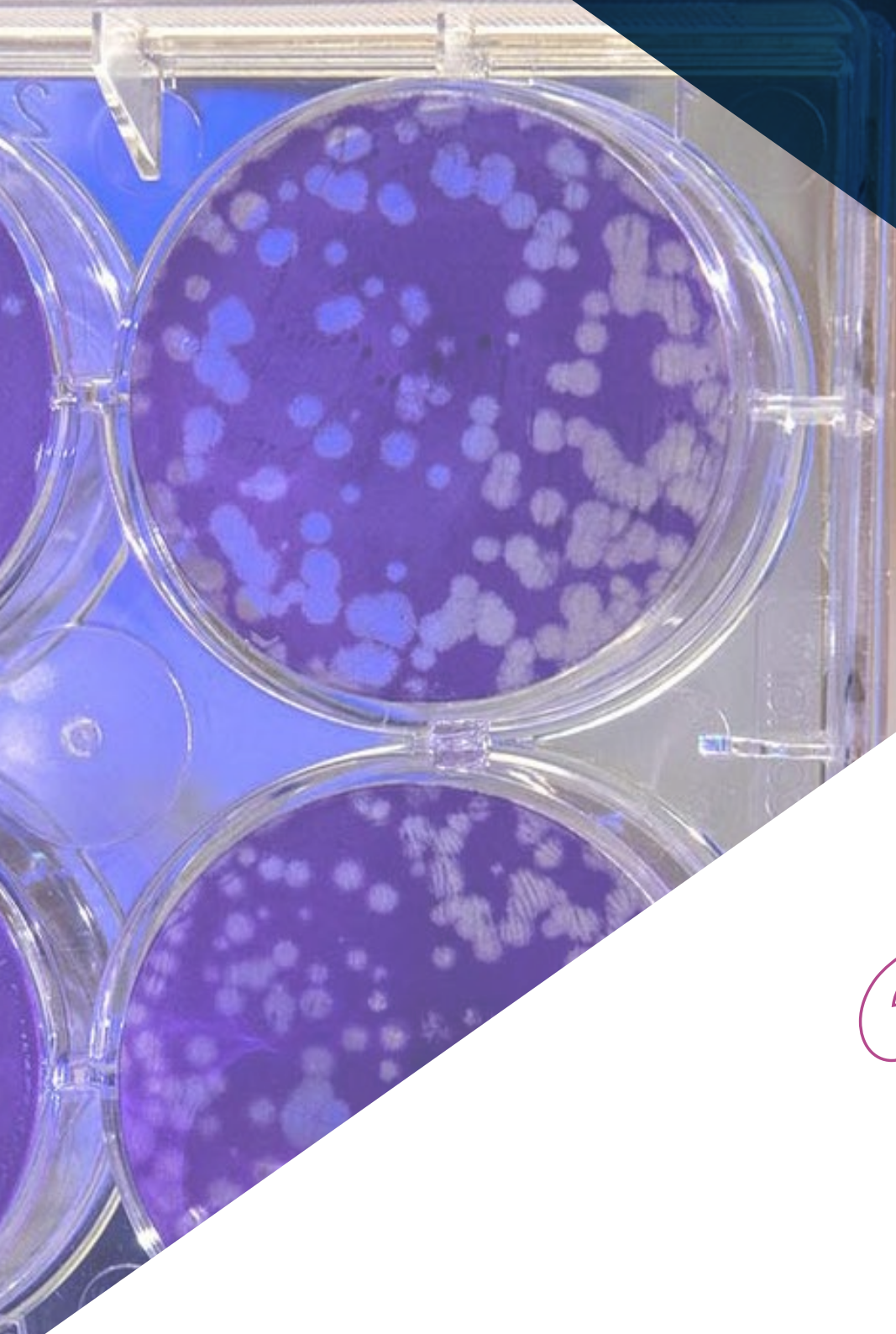
- 17.1. Overview of rare infectious diseases
  - 17.1.1. General concepts
  - 17.1.2. Epidemiology of Rare or Uncommon Infectious Diseases
- 17.2. Bubonic Plague
  - 17.2.1. Definition
  - 17.2.2. Etiology
  - 17.2.3. Clinical Picture
  - 17.2.4. Diagnosis
  - 17.2.5. Treatment
- 17.3. Lyme Disease
  - 17.3.1. Definition
  - 17.3.2. Etiology
  - 17.3.3. Clinical Picture
  - 17.3.4. Diagnosis
  - 17.3.5. Treatment
- 17.4. Babesiosis
  - 17.4.1. Definition
  - 17.4.2. Etiology
  - 17.4.3. Clinical Picture
  - 17.4.4. Diagnosis
  - 17.4.5. Treatment
- 17.5. Rift Valley Fever
  - 17.5.1. Definition
  - 17.5.2. Etiology
  - 17.5.3. Clinical Picture
  - 17.5.4. Diagnosis
  - 17.5.5. Treatment
- 17.6. Diphyllbothriasis
  - 17.6.1. Definition
  - 17.6.2. Etiology
  - 17.6.3. Clinical Picture
  - 17.6.4. Diagnosis
  - 17.6.5. Treatment
- 17.7. Zygomycosis
  - 17.7.1. Definition
  - 17.7.2. Etiology
  - 17.7.3. Clinical Picture
  - 17.7.4. Diagnosis
  - 17.7.5. Treatment
- 17.8. Cysticercosis
  - 17.8.1. Definition
  - 17.8.2. Etiology
  - 17.8.3. Clinical Picture
  - 17.8.4. Diagnosis
  - 17.8.5. Treatment
- 17.9. Kuru
  - 17.9.1. Definition
  - 17.9.2. Etiology
  - 17.9.3. Clinical Picture
  - 17.9.4. Diagnosis
  - 17.9.5. Treatment
- 17.10. The Re-emergence of Old Diseases: Causes and Effects
  - 17.10.1. Emerging and New Infectious Diseases that Demand New Approaches to their Control
  - 17.10.2. The Rise of Microbiological Resistance to Antimicrobial Drugs
  - 17.10.3. Development of New Antibiotics

07

# Clinical Internship

After completing the first stage of this program, the doctor will have the opportunity to conclude their studies with a face-to-face and intensive clinical internship in a renowned hospital center. From this educational period, they will have a solid command of the most required skills in infectious diseases diagnosis and treatment.





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*Enroll in TECH and develop your clinical practice in one of the best hospitals in the world”*

In this SHybrid Professional Master's Degree, physicians will complete their update through a practical and face-to-face stay in a reference clinical unit regarding the management of complex infectious diseases. This program consists of 3 weeks in which, based on the on-site approach of real patients, the specialist will broaden their care competencies and will be able to handle the most advanced diagnostic and therapeutic technologies currently available for this area of health care.

In addition, you will have the opportunity to choose the institution that best suits your academic needs and geographic location. This is possible thanks to TECH, which has selected a large number of reference hospital facilities for this unique academic modality. All the centers available to the graduate of this program have the latest resources and a team of first class experts.

For the educational process, the professional will be supported by an assistant tutor, a figure designated to help them incorporate the fundamental skills related to the identification of different infectious pathogens and the implementation of the latest generation of antibiotic therapeutics.

The practical part will be carried out with the active participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of teachers and other fellow trainees that facilitate teamwork and multidisciplinary integration as transversal competencies for the practice of medicine (learning to be and learning to relate).





The procedures described below will form the basis of the practical part of the internship, and their implementation is subject to both the suitability of the patients and the availability of the center and its workload, with the proposed activities being as follows:

Module	Practical Activity
<b>Advances in molecular biology as an advanced diagnostic method in infectious diseases</b>	Apply molecular detection of respiratory pathogens using polymerase chain reaction
	Indicate Nucleic Acid detection based on positive blood cultures
	Detect presence of Nucleic Acids from viruses and bacteria by direct identification of pathogens by means of direct identification of pathogens in blood
	Properly interpret the results obtained through microbiological and biochemical studies to detect the most complex infectious pathologies
<b>Advanced clinical infectiology of respiratory diseases</b>	Recognize the symptoms of H1N1 influenza and differentiate it from other respiratory pathologies
	Identify the presence of respiratory pathologies, such as bacterial pneumonia, through bronchoscopy with bronchoalveolar lavage
	Prevent the occurrence of acute idiopathic eosinophilic pneumonia through an adequate pharmacological management of simple pulmonary eosinophilia
<b>Latest Information on Coronavirus Infections</b>	Determine the most advanced antimicrobial and antibiotic drugs for respiratory pathologies
	Identify the main microbiological characteristics and members of the coronavirus family
	Manage the epidemiological changes in coronavirus infections from their discovery to the present day from the evolution of new variants of SARS-CoV-2
<b>Latest trends in relation to Sexually Transmitted Infections (STIs)</b>	Recognize new pulmonary and cardiovascular pathologies secondary to or resulting from coronavirus infection
	Check for genital warts, which may be a sign of Human Papillomavirus infection, through genital colposcopy
	Promote the use of prophylactic HPV vaccines
	Master the main inhibitor and blocking drugs that prevent the replication of the Human Immunodeficiency Virus
	Learn the latest trends on the use of PrEP and PEP drugs with potential HIV infections

Module	Practical Activity
<b>Viral hemorrhagic diseases, Arbovirosis, Zoonoses and rare infectious diseases</b>	Identify the risks of Ebola infection through poorly understood routes such as sexual transmission
	Apply alternative treatments such as blood transfusions, in patients with severe Arbovirosis such as Dengue, to replace blood loss and sustain electrolyte replacement
	Analyze the main control measures for zoonoses of concern to public health systems worldwide
	Know the generalities of the most common infectious diseases in the world such as: Bubonic Plague, Lyme Disease, Babesiosis, Rift Valley Fever, Diphyllobothriasis, Zygomycosis, Cysticercosis and Kuru
<b>Antibiotic resistance and near-future therapies</b>	Conduct a genetic analysis of patients, based on the basis of pharmacogenomics, to determine which drugs are most suitable for them according to their DNA
	Develop alternative and innovative therapies with Bacteriophages, non-harmful viruses that feed on bacteria harmful to the human organism
	Treat patients with infections with novel techniques such as Liposome nanoparticles, used as bait to trap bacterial toxins
	Use novel technologies such as RA01, an anti-infective therapy based on the existence of antibodies that act as facilitators of infections



*Obtain the most requested competences from the clinical point of view, in the approach of different infectious pathologies of respiratory, chronic, Arbovirosis, among others”*

## Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this entity commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship program at the center.



## General Conditions for Practical Training

The general terms and conditions of the internship program agreement shall be as follows:

**1. TUTOR:** During the Hybrid Professional Master's Degree, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

**2. DURATION:** The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

**3. ABSENCE:** If the students does not show up on the start date of the Hybrid Professional Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

**4. CERTIFICATION:** Professionals who pass the Hybrid Professional Master's Degree will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** the Hybrid Professional Master's Degree shall not constitute an employment relationship of any kind.

**6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Hybrid Professional Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

**7. DOES NOT INCLUDE:** The Hybrid Professional Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

# 08

## Where Can I Do the Clinical Internship?

This Hybrid Professional Master's Degree in Clinical Infectious Diseases and Advanced Antibiotic Therapeutics offers a clinical practice of the highest level, in hospitals of international prestige. This is possible thanks to the network of contacts and collaborators at TECH's disposal, as the largest digital university of the moment. In these institutions, the specialist will have access to the most up-to-date technology and will be able to offer quality medical assistance to real patients with different pathologies. Likewise, they will have the advice and supervision of distinguished experts in this professional area.






“

*Enroll in this program of studies and acquire the most up-to-date competencies and procedures in relation to Clinical Infectious Diseases and Advanced Antibiotic Therapeutics”*

## tech 46 | Where Can I Do the Clinical Internship?



The student will be able to complete the practical part of this Hybrid Professional Master's Degree at the following centers:



**Medicine**

### Policlínico HM Sanchinarro

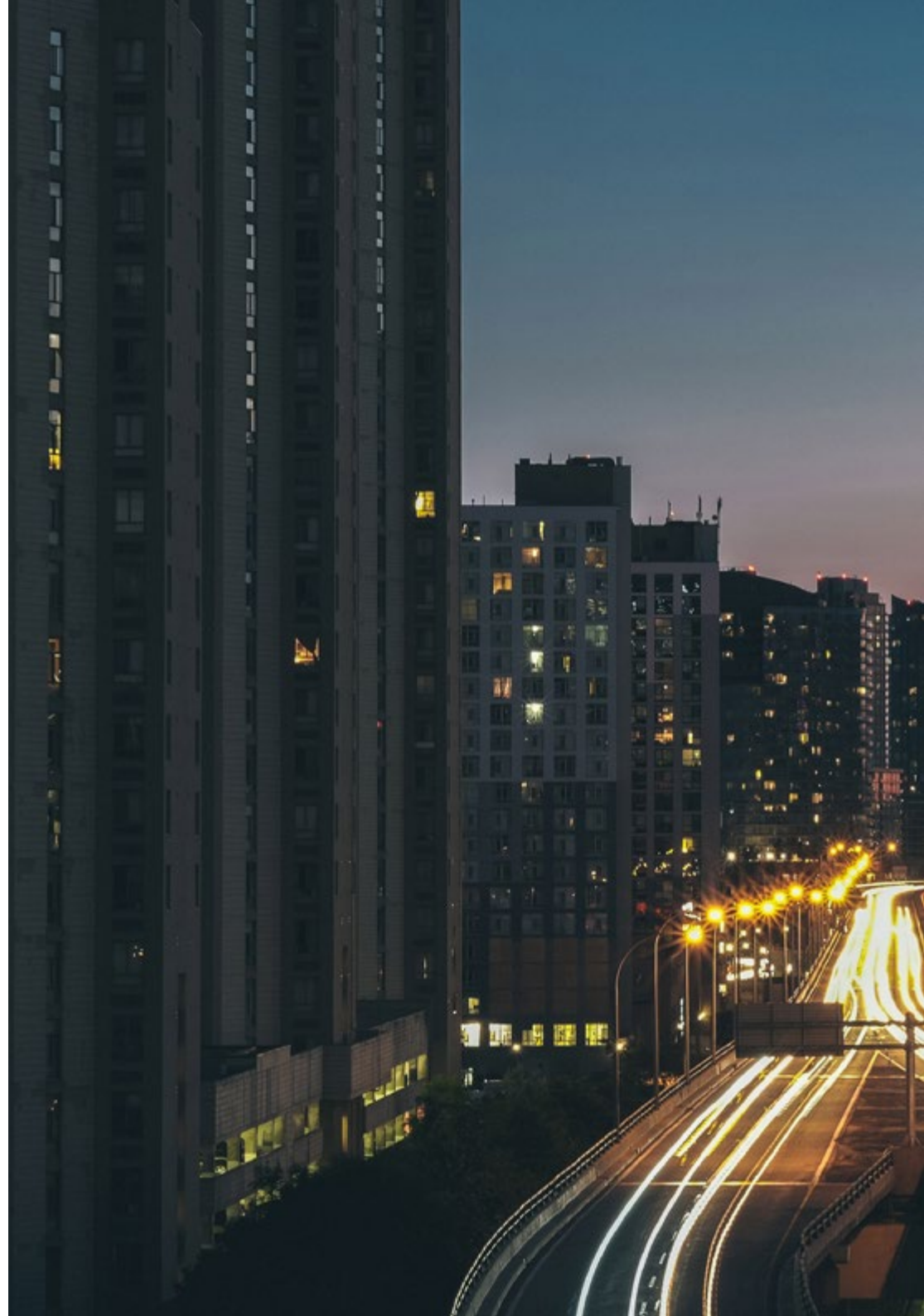
Country	City
Spain	Madrid

Address: Av. de Manoteras, 10,  
28050, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

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**Related internship programs:**  
Gynecological Care for Obstetricians  
- Nursing in the Digestive Tract Department





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*Make the most of this opportunity to surround yourself with expert professionals and learn from their work methodology”*

09

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.







“

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

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will 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.

“

*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 years old age of 43.5..

*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.



# 10 Certificate

This Hybrid Professional Master's Degree in Clinical Infectious Diseases and Advanced Antibiotic Therapeutics guarantees students, in addition to the most rigorous and up-to-date education, access to a Hybrid Professional Master's Degree diploma issued by TECH Global University.







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

This program will allow you to obtain your **Hybrid Professional Master's Degree diploma in Clinical Infectious Diseases and Advanced Antibiotic Therapeutics** 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.

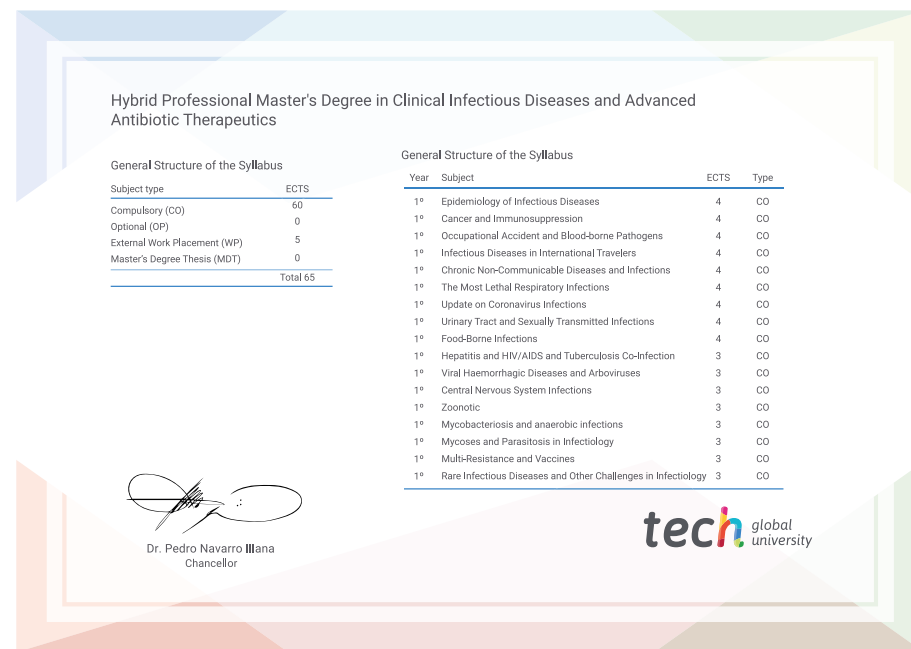
Title: **Hybrid Professional Master's Degree in Clinical Infectious Diseases and Advanced Antibiotic Therapeutics**

Course Modality: **Hybrid (Online + Clinical Internship)**

Duration: **12 months**

Certificate: **TECH Global University**

Recognition: **60 + 5 ECTS Credits**



\*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  
personalized service innovation  
knowledge present quality  
development online languages  
virtual classro



**Hybrid Professional Master's Degree**  
Clinical Infectious Diseases and  
Advanced Antibiotic Therapeutics

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 ECTS Credits

# Hybrid Professional Master's Degree

Clinical Infectious Diseases and  
Advanced Antibiotic Therapeutics