Master's Degree
Tuberculosis

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Master's Degree
Tuberculosis

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Global University**
- Credits: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: www.techtitute.com/us/medicine/master-degree/master-tuberculosis

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01

Introduction

The World Health Organization estimates that 1.5 million people died of Tuberculosis in 2020, including 214,000 people with HIV. Although the cumulative incidence has decreased, medical professionals specialized in the comprehensive management of this, and other mycobacterial infections are still required. This 100% online program is aimed at all those professionals involved in the treatment of infections, who wish to delve in an exhaustive and up-to-date way in the available diagnostic tools, as well as the main guidelines for the treatment of infections caused by this group of microorganisms. With this program, you will acquire an up-to-date and eminently practical knowledge, thanks to the range of simulations of real cases presented by the teaching team in this course.

Learn more about the latest developments in the field of proteomics and massive sequencing with this Master's Degree"

This Master's Degree in Tuberculosis is aimed at healthcare professionals in charge of the diagnosis, treatment and prevention of infections who wish to intensively address the most up-to-date and extensive knowledge of this infectious disease with the main objective of incorporating it into their usual clinical practice.

During this 12-month program, i.e., 1,500 teaching hours, professionals will delve into the relevant factors in managing these clinical pictures and the recent diagnostic tools used, as well as the latest developments in the treatment of infections caused by this group of microorganisms.

Also, the specialized team with extensive experience in Microbiology in leading hospitals in this area of medicine, will teach students the latest scientific advances achieved for the management of Tuberculosis and other infections in special populations whose approach requires extensive knowledge as in the case of pediatric patients, HIV patients, transplanted or immunocompromised.

An opportunity to update knowledge, while balancing personal and professional responsibilities in a 100% online program. Students will be able to access all the content at any time of the day, as there are no sessions with fixed schedules, they will only need a device with an Internet connection that allows them to view the entire syllabus, as well as the video summaries, essential specialized readings and the practical cases proposed by the teaching team.

This **Master's Degree in Tuberculosis** contains the most complete and up-to-date scientific program on the market. The most important features include:

- The development of practical cases presented by experts in Tuberculosis and 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
- Practical exercises where the self-assessment process can be carried out to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

Apply the latest scientifically proven treatments to treat Tuberculosis thanks to this online teaching"

Access recent advances in non-tuberculous mycobacterial infections in immunocompromised patients"

Learn about the latest advances in the treatment of latent tuberculosis infection in HIV patients.

Update your knowledge to establish the best diagnostic method available for each patient.

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

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn 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. This will be done with the help of an innovative system of interactive videos made by renowned experts.

02

Objectives

This Master's Degree offers medical professionals an update so they can keep abreast of the latest developments in the evolution of Tuberculosis and mycobacterial infection up to the present. Likewise, the teaching team on this academic program will impart a deep body of knowledge of the diagnostic techniques used, such as proteomics or image diagnosis, as well as the spectrum of action, dosage and most important adverse effects of the drugs used in the various treatments for these types of bacterial infection. All this, in order to have detailed knowledge of the most current studies in this field and improve latent tuberculosis infection in all types of patients. The extensive multimedia content and the Relearning system used by TECH will favor the achievement of these goals.

TECH rigorously selects the teaching team to offer you quality teaching at the academic forefront"

General Objectives

- In-depth study and updating of knowledge on infections caused by mycobacteria
- Have a broad body of knowledge of the available diagnostic methods and perform a detailed study of the drugs used in treatment, so as to optimize diagnoses and establish the most effective treatment guidelines with less adverse effects
- Comprehensively address and manage both pulmonary and extrapulmonary clinical pictures caused by Mycobacterium Tuberculosis Complex, so as to know how to recognize, diagnose and treat this type of infections
- Define and recognize the clinical, microbiological, diagnostic and therapeutic characteristics of infections caused by an important number of non-tuberculous mycobacteria

Specific Objectives

Module 1. Mycobacterial Infections

- Have in-depth knowledge of the evolution of the disease and contextualize the importance of mycobacterial infection today
- In-depth knowledge of the characteristics of the genus, the classification of mycobacteria and the main mechanisms of transmission of these microorganisms
- Study the pathogenesis of the infection and the different clinical forms in depth
- In-depth knowledge of prevention and control measures

Module 2. Mycobacterial Infection Diagnosis

- In-depth knowledge of which types of samples and methods of sample collection are the most appropriate to send to the laboratory
- Gain a deep understanding of the advantages and disadvantages of the main diagnostic methods so as to optimize diagnoses
- Know when and where (cultures, clinical samples) molecular biology techniques can be used to diagnoses mycobacterial infections
- Know the other diagnostic techniques used, such as proteomics or diagnostic imaging

Module 3. Medication and Treatments for Mycobacterial Infections

- Recognize the different populations to be treated in tuberculosis infection in order to design treatments with the appropriate drugs
- Become deeply familiar with the spectrum of action, posology and most important adverse effects of the drugs used in the various treatments for these bacterial infections
- Get to know the new antibiotics available whose spectrum of action includes mycobacteria and can offer alternatives in infections caused by resistant mycobacteria
- Have in-depth knowledge of the most prevalent antibiotic resistances and understand the repercussions they may have when prescribing different treatments

Module 4. Infections caused by Mycobacterium Tuberculosis Complex

- Learn the natural history of the disease caused by Mycobacterium Tuberculosis Complex
- In-depth knowledge of the pathogenesis of these infections and the diagnostic criteria according to the clinical features manifested in patients
- Recognize the clinical signs and symptoms, laboratory findings and imaging studies for the diagnosis of pulmonary Tuberculosis and other forms of extrapulmonary Tuberculosis
- Learn to make decisions regarding available treatment regimens

Module 5. Infections by Non-Tuberculous Mycobacteria

- Get to know the evolution and current problems of infections caused by non-tuberculous mycobacteria
- Learn the microbiological characteristics, clinical picture and treatment of infections caused by M. Avium Complex, M. Kansasii, M. Ulcerans, M. Genavense, M. Haemophilum, M. Marinum, M. Scrofulaceum and M. Gordonae

Module 6. Others Infections by Non-Tuberculous Mycobacteria

- In-depth knowledge of the evolution and current problems of infections caused by non-tuberculous mycobacteria
- Learn the microbiological characteristics, clinical picture and treatment of infections caused by M. abscessus, M. Chelonaei, M. Fortuitum Complex, M. Malmoense, M. Simiae, M. Szulgai, M. Xenopi and other non-tuberculous mycobacteria

Module 7. Mycobacterial Infections in HIV Patients

- Study the epidemiology of TB/HIV coinfection in depth
- Gain detailed knowledge of the manifestations of pulmonary and extrapulmonary tuberculosis in HIV-infected patients according to the number of LTCD4
- Delve into the available diagnostic methods and peculiarities to optimize diagnoses in this special type of patients
- Have broad knowledge of the treatment of tuberculosis and non-tuberculous mycobacterial infections in HIV patients
- Management of latent tuberculosis infection in this type of patient and its treatment

Module 8. Mycobacterial Infections in Special Patients

- In-depth knowledge of the peculiarities of tuberculosis in different patients: nephropaths, hepatopaths, the elderly, patients treated with biologics, oncohematologic patients, lung transplant recipients and other patients with solid organ transplants
- Conduct an in-depth study of non-tuberculous mycobacterial infections in immunocompromised patients and patients with pulmonary pathology
- Know how to manage latent Tuberculosis in immunosuppressed patients

Module 9. Mycobacterial Infections in Pediatrics

- Become familiar with the evolution and current problems of childhood mycobacterial infections
- Delve into the different clinical forms of tuberculous disease in this type of patients
- Know all the available diagnostic methods that can be used, including clinical history and immunology, among others, which also helps make adequate differential diagnoses
- Delve into the treatment of Tuberculosis disease in pediatric patients, including resistant tuberculosis and monitoring during treatment

Module 10. Leprosy

- Become familiar with the evolution and current problems of infections caused by the Mycobacterium Leprae complex
- Delve into the reservoirs and the different routes of transmission of this pathology, as well as the etiopathogenesis and epidemiology
- Learn the different clinical classifications of the disease and its anatomopathological study
- In-depth knowledge of the diagnostic techniques and treatment of this infection including the development of resistance

This online program will teach you about the latest advances in bactericidal antibiotic treatments"

03

Skills

The structure of this Master's Degree has been designed so that the medical professional acquires a close and renewed knowledge about Tuberculosis with an agile teaching and with a content at the academic forefront. Therefore, at the end of this online university program, the student will be able to achieve a broader and deeper knowledge of this infectious disease, its diagnosis and treatment in different types of patients with a global and comprehensive approach.

You will be able to access the extensive library of multimedia resources offered by this online program at any time of the day"

General Skills

- Become deeply familiar with biological safety measures to work with these bacteria in Microbiology laboratories
- Conduct an in-depth study of the particular characteristics of infections produced by this type of bacteria in special populations, with special emphasis on HIV patients, patients with chronic diseases, the elderly, immunocompromised patients, transplanted or pediatric patients
- Have in-depth knowledge and understanding of Mycobacterium Leprae complex infection today
- Gain an in-depth understanding of how stains are performed, what culture media are available and how phenotypic identifications of mycobacteria are performed

Renew your knowledge on the techniques available in the field of molecular biology thanks to this Master's Degree"

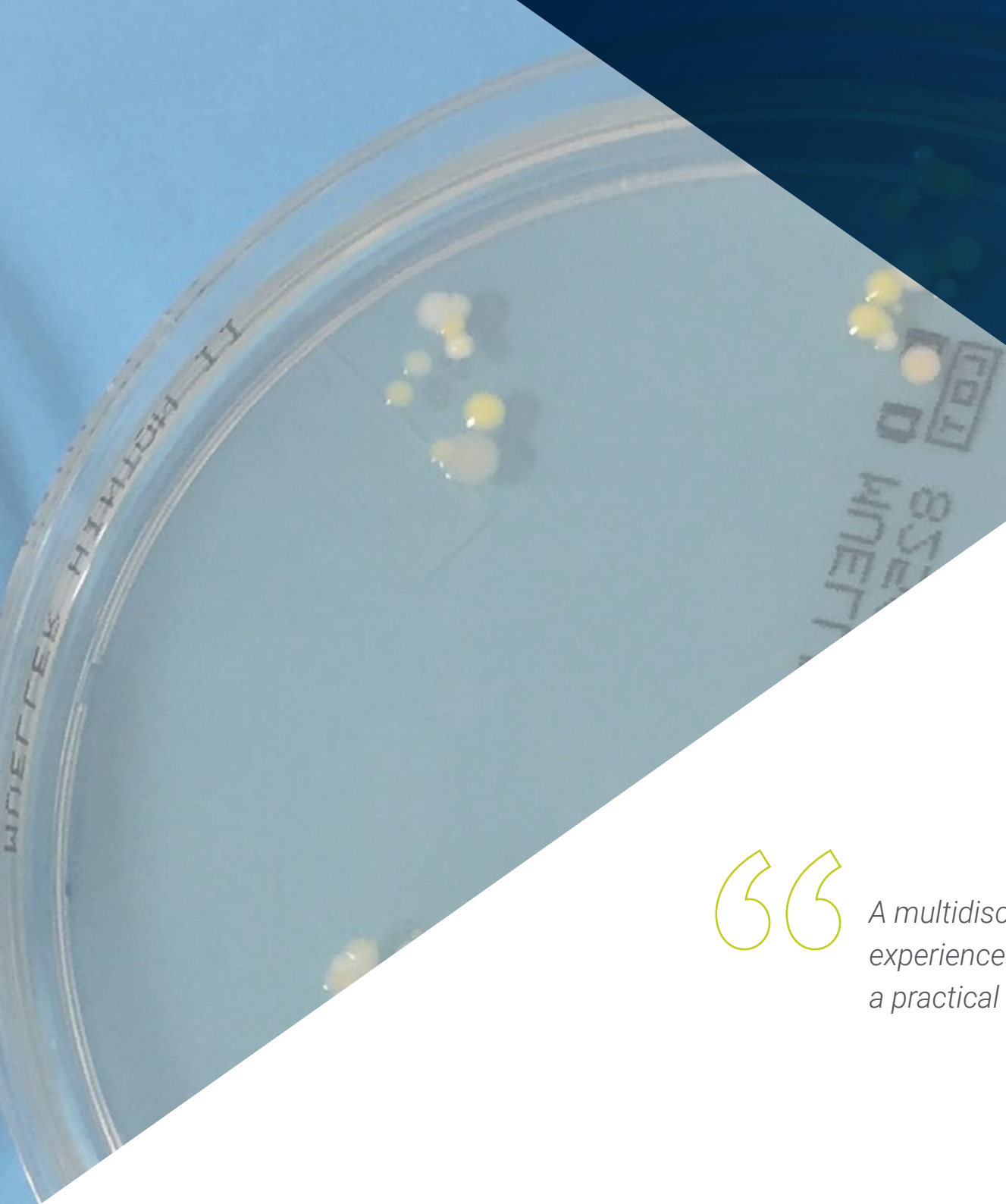
Specific Skills

- Learn the aspects related to prevention and control of this infection, including the most relevant aspects
- Recognize special situations in this type of population with perinatal tuberculosis or infections in immunocompromised pediatric patients
- Gain an in-depth knowledge of the epidemiology, diagnosis, clinical manifestations and therapeutic management of atypical mycobacterial infections in pediatrics
- Delve into a form of extrapulmonary tuberculous infection such as tuberculous meningitis
- Recognize the main non-tuberculous mycobacterial infections in HIV patients
- Learn the techniques to perform sensitivity studies, both in solid and liquid means, as well as the techniques available in the field of molecular biology

04

Course Management

In its maxim of offering an elite education for all, TECH rigorously selects the entire teaching staff that make up each of the programs it offers. In this program the students will have a teaching staff specialized in the area of microbiology, infectious diseases, pulmonology and pediatricians. All of them with an extensive professional career in the different specialties in reference hospitals, which gives guarantees to the health professional to benefit from a teaching staff that knows the reality of infectious diseases and their approach in different types of patients.



A multidisciplinary teaching team with extensive experience in Tuberculosis will provide you with a practical vision to apply the best treatment"

Management

Dr. Sánchez Romero, Isabel

- Area Specialist in the Microbiology Department of the Puerta de Hierro Majadahonda University Hospital, Madrid
- PhD in Medicine and Surgery from the University of Salamanca
- Medical Specialist in Clinical Microbiology and Parasitology
- Member of the Spanish Society of Infectious Diseases and Clinical Microbiology
- Technical Secretary of the Madrid Society of Clinical Microbiology

Professors

Dr. Alarcón Cavero, Teresa

- Biologist Specialist in Microbiology, La Princesa University Hospital
- Head of Group 52 of the Research Institute of the La Princesa Hospital
- Degree in Biological Sciences with a major in Fundamental Biology from the Complutense University of Madrid
- Master's Degree in Medical Microbiology from the Complutense University of Madrid

Dr. Callejas Díaz, Alejandro

- Facultative Area Specialist. Infectious Diseases Department, Internal Medicine, Puerta de Hierro University Hospital, Majadahonda, Madrid
- Teaching Collaborator at the Autonomous University of Madrid
- Degree in Medicine from the Autonomous University of Madrid
- PhD in Medicine and Surgery from the Autonomous University of Madrid
- Master's Degree in Infectious Diseases and Antimicrobial Treatment by the CEU Cardenal Herrera University

Dr. Díaz de Santiago, Alberto

- Attending physician at the HIV Unit of the Puerta de Hierro Majadahonda University Hospital
- Attending physician for infectious diseases at the Ramón y Cajal Hospital
- Master's Degree in Human Immunodeficiency Virus Infection, Rey Juan Carlos I University
- Degree in Medicine and Surgery, Autonomous University of Madrid
- Doctor of Medicine, HIV-Hepatitis Coinfection. Autonomous University of Madrid

Dra. de la Fuente Moral, Sara

- Area Specialist in Internal Medicine at the Puerta de Hierro University Hospital
- Area Specialist in the Internal Medicine Department of the Santa Cristina University Hospital
- Area Specialist in the Emergency Department of the Puerta de Hierro University Hospital
- Area Specialist in the Internal Medicine Department of the Infanta Cristina University Hospital
- Researcher at the Biomedical Research Foundation of the Puerta de Hierro University Hospital
- Author and co-author of numerous scientific publications
- PhD from the Autonomous University of Madrid
- Master's Degree in Infectious Diseases and Antimicrobial Treatment by the CEU Cardenal Herrera University

Dr. García, Diego Domingo

- Specialist in Microbiology and Parasitology
- Area Specialist in the Microbiology Department La Princesa University Hospital Madrid
- Teaching Collaboration Autonomous University of Madrid
- Doctorate in Microbiology and Parasitology, Faculty of Pharmacy,
- Complutense University of Madrid
- Graduate in Pharmacy. Complutense University of Madrid

Dr. Fernández Cruz, Ana

- Infectious Diseases Specialist at the Puerta de Hierro Majadahonda University Hospital
- Assistant Physician in the Infectious Diseases and Clinical Microbiology Department of the Gregorio Marañón General University Hospital
- Specialist in Internal Medicine in different health centers in Spain
- PhD in Medicine and Surgery from the Autonomous University of Madrid
- Degree in Medicine and Surgery from the Autonomous University of Madrid
- Master's Degree in Infectious Diseases and Clinical Microbiology, Complutense University of Madrid
- Master's Degree in Medical Management and Clinical Management by the UNED
- University expert in HIV infection and associated diseases by the Miguel Hernández University of Elche

Dr. Moreno, Jaime Esteban

- Specialist in Microbiology and Parasitology
- Attending Physician of the Department of Clinical Microbiology Jiménez Díaz Foundation
- Coordinator for Specialized Care of the Jiménez Díaz Foundation of the Regional Program for the Prevention and Control of Tuberculosis in the Community of Madrid
- Coordinator of the mycobacteria working group of the Madrid Society of Clinical Microbiology
- Evaluator of Research Projects of the Community of Madrid
- Evaluator of Official Projects of ANEP and SEPAR
- National and international patent "Titanium materials anodized with fluorine"
- National and international patent "Bioceramic materials for the treatment of osteomyelitis"
- Associate Professor, Autonomous University of Madrid
- Doctorate in Microbiology and Parasitology, Faculty of Pharmacy, Complutense University of Madrid
- PhD degree in Microbiology from the Complutense University of Madrid
- Degree in Medicine and Surgery from the Complutense University of Madrid
- Medical Specialist in Microbiology and Parasitology by the MIR system
- Accreditation for the Faculty of University Professors by ANECA

Dr. García Díez, Julio

- Pharmacist specialized in Microbiology and Parasitology
- Area Specialist in Microbiology and Clinical Parasitology at the University Hospital of Fuenlabrada
- Area Specialist in Microbiology and Clinical Parasitology at the Severo Ochoa University Hospital
- Author of numerous publications for scientific congresses
- Degree in Pharmacy, Complutense University of Madrid
- Master's Degree in Infectious Diseases and Antimicrobial Treatment in the Cardenal Herrera University
- Expert in Chronic Infectious Diseases and Imported Pathology by Cardenal Herrera University

Dr. García-Masedo, Sarela

- Pharmacist Specialist in Clinical Microbiology and Parasitology
- Area Specialist in the Microbiology Department of the Puerta de Hierro Majadahonda University Hospital
- Resident Intern Pharmacist at the Microbiology and Parasitology Laboratory of the Puerta de Hierro University Hospital
- Pharmacist at the Sexta Avenida Pharmacy
- PhD in Microbiology Autonomous University
- Degree in Pharmacy. Autonomous University
- Supervised internship at the University of Oporto at San Juan del Puerto Hospital
- Member of: Spanish Society of Clinical Microbiology and Infectious Diseases, Madrid College of Pharmacists

Dr. Gijón, Paloma
- Specialist in Clinical Microbiology and Infectious Diseases at the Gregorio Marañón Hospital
- Microbiology Resident Tutor at the Gregorio Marañon Hospital
- Specialist in Family and Community Medicine at the Ramón y Cajal Hospital
- Diploma in Health and International Cooperation from the Autonomous University of Madrid
- Degree in Medicine and Surgery from the Complutense University of Madrid

Dr. González Ojeda, Virginia
- Head of the Pediatrics Department at NISA Pardo de Aravaca Hospital
- Head of the Pediatrics Service at La Zarzuela Hospital
- Responsible for the Pediatric ICU at QuirónSalud Madrid University Hospital
- Participant in several trials and research studies
- Author and co-author of several scientific articles and book chapters on Pediatrics
- Master's Degree in Medical Expertise and of Bodily Injury Assessment by the University of Alcalá of Madrid
- Teacher in university studies of Medicine and in training courses for doctors
- Doctor in Medicine by the Autonomous University of Madrid

Dr. Muñez, Elena
- Area Specialist, Internal Medicine, Infectious Diseases, Puerta de Hierro University Hospital, Majadahonda, Madrid
- Doctor in Medicine and Surgery at the Autonomous University of Madrid
- Degree in Medicine and Surgery from the Complutense University of Madrid

Dr. Laporta, Rosalía
- Area Specialist in the Pulmonology Service in the Lung Transplant Unit Puerta de Hierro University Hospital
- Associate Professor at the Autonomous University of Madrid
- Doctor of Medicine. Autonomous University of Madrid
- Degree in Medicine and Surgery. University of Salamanca
- Specialist in Pulmonology

Dr. Lázaro Carrasco de la Fuente, María Teresa
- Specialist in Pulmonology and lung transplantation
- Area Specialist in the Pulmonology Service. Lung Transplant Unit. Puerta de Hierro University Hospital
- Associate Professor, CC Health, Department of Medicine, Puerta de Hierro University Hospital Majadahonda
- Associate Professor at the Autonomous University of Madrid
- Degree in Medicine and Surgery. University of Alcalá
- Doctor of Medicine. University of Alcalá

Ms. Losada, Carmen
- Community Pharmacist and at Wetones Clinical Analysis Laboratory
- Degree in Pharmacy from the Alfonso X El Sabio University
- Specialization in Pharmacy Office by Alfonso X El Sabio University
- Master's Degree in Orthopedics from the University of Salamanca
- Master of Business Administration (MBA) Executive by the Business School of Valladolid

Dr. Molina Esteban, Laura María

- Microbiology Specialist
- Area Specialist in the Microbiology Department Fuenlabrada University Hospital of Madrid
- Doctorate, Complutense University of Madrid
- Degree in Medicine and Surgery. Complutense University of Madrid
- Member of the Spanish Association of Medical Biopathology (A.E.B.M.)

Dr. Pintos Pascual, Ilduara

- Assistant Physician of the Internal Medicine Department at the Puerta de Hierro Majadahonda University Hospital
- PhD in Medicine and Surgery from the Autonomous University of Madrid
- Degree in Medicine, University of Alcalá Henares

Dr. Portero Azorín, Francisca

- Acting Head of the Microbiology Service at the Puerta de Hierro Majadahonda University Hospital
- Specialist in Microbiology and Clinical Parasitology at the Puerta de Hierro University Hospital
- Doctorate in Medicine from the Autonomous University Madrid
- Postgraduate in Clinical Management by Gaspar Casal Foundation
- Research stay at the Presbyterian Hospital of Pittsburgh through a FISS scholarship

Dr. Ramos Martínez, Antonio

- Head of Infectious Diseases Section of the Puerta de Hierro Majadahonda University Hospital
- Head of Internal Medicine Section of the Puerta de Hierro Majadahonda University Hospital
- Coordinator of Clinical Management of Covid patients of the Puerta de Hierro Majadahonda University Hospital
- Coordinator of the FEMI Infectious Diseases Working Group
- Teacher at the Autonomous University of Madrid
- PhD in Medicine from the Autonomous University in Madrid
- Degree in Medicine and Surgery from the Complutense University of Madrid

Dr. Zamarrón Fuertes, Pilar

- Area Medical Specialist in charge of the Department of Multi-resistant Bacteria and Antibiotic Resistance in the Microbiology Department of the Virgen de la Salud Hospital in Toledo
- Fellowship in the Tropical Medicine Unit of the Ramón y Cajal Hospital
- Medical Specialist in Microbiology at the Montepríncipe Hospital
- Medical Specialist in Microbiology at the Mérida Hospital
- Doctorate in Medicine and Surgery, University of Alcala
- Degree in Medicine and Surgery from the Complutense University of Madrid
- Resident Medical Intern in Microbiology and Parasitology at the Ramón y Cajal Hospital

05

Structure and Content

This Master's Degree has been developed by a teaching team specialized in infectious diseases who belong to different disciplinary fields. Infectious diseases are a constant challenge for professionals involved in their diagnosis and treatment, therefore, throughout the 10 modules into which this study plan has been divided, students will delve and update the essential knowledge for an optimal approach to mycobacterial infections. All this will allow the medical professional to be able to prescribe according to the type of microorganism involved, the sensitivity studies carried out and to offer the most effective treatment depending on the patient being treated.

The simulations of real cases will allow you to learn more about the treatments used for Tuberculosis and other mycobacteria"

Module 1. Mycobacterial Infections

1.1. Evolution
1.2. Current Problems
1.3. Characteristics of Mycobacterium Genus
  1.3.1. Composition
  1.3.2. Growth and Pigmentation
  1.3.3. Pathogenic Character
1.4. Mycobacteria Classification
1.5. Epidemiology
  1.5.1. Reservoirs
  1.5.2. Transmission Mechanisms
1.6. Pathogenic Mechanisms
1.7. Clinical Forms
  1.7.1. Mycobacterium Tuberculosis Complex
  1.7.2. Non-Tuberculous Mycobacterias
1.8. Prevention and Control Measures
  1.8.1. Chemoprophylaxis
  1.8.2. Vaccines
1.9. Biological Safety and Mycobacterias

Module 2. Mycobacterial Infection Diagnosis

2.1. Clinical Suspicion
  2.1.1. Sample Collection
2.2. Tuberculin Test
  2.2.1. Booster Effect
  2.2.2. Inconveniences
2.3. Diagnosis by IGRA
  2.3.1. Commercial Systems
  2.3.2. Advantages and Disadvantages
2.4. Microscopy
  2.4.1. Conventional Stains
  2.4.2. Stains for Fluorescence Microscopy
2.5. Culture
  2.5.1. Pre-Treatment Phase
  2.5.2. Cultivation in Solid Media
  2.5.3. Cultivation in Liquid Media
  2.5.4. Cultures in Automated Systems
2.6. Phenotypic Identification Techniques
  2.6.1. Microscopy and Morphology
  2.6.2. Biochemical Tests
2.7. Molecular Identification Techniques
  2.7.1. Types
  2.7.2. On Direct Sampling
  2.7.3. On Colony Grown in Cultures
2.8. Others Diagnostic Methods
  2.8.1. Chromatographic Identification
  2.8.2. Immunochromatography
2.9. Maldi-TOF in Identifying Mycobacteria
2.10. Diagnostic Imaging

Module 3. Medication and Treatments for Mycobacterial Infections

3.1. Bacterial Populations to be Treated
3.2. Bactericidal Antibiotics
  3.2.1. Isoniazid
  3.2.2. Rifampicin
  3.2.3. Ethambutol
  3.2.4. Streptomycin
3.3. Sterilizing Antibiotics
  3.3.1. Pyrazinamide
  3.3.2. Rifampicin
3.4. Second-Line Antibiotics
  3.4.1. Aminoglycosides
  3.4.2. Fluoroquinolones
  3.4.3. PAS

3.5. New Antibiotics
  3.5.1. Linezolid
  3.5.2. Levofloxacin
  3.5.3. Others
3.6. Treatment Guidelines
  3.6.1. Tuberculous Infections
  3.6.2. Infections from Other Mycobacteria
3.7. Sensitivity Studies in Mycobacteria
  3.7.1. Indications
  3.7.2. Proportion Technique
3.8. Sensitivity Studies in Liquid Media
3.9. Sensitivity Studies using Molecular Techniques
3.10. Antibiotic Resistance and its Impact on Treating Mycobacterial Infections

Module 4. Infections caused by Mycobacterium Tuberculosis Complex

4.1. Natural Evolution of the Disease
  4.1.1. Immunopathology
4.2. Pathogenesis
4.3. Clinical Manifestations
  4.3.1. Diagnostic Criteria
4.4. Pulmonary Tuberculosis
  4.4.1. Primary Pulmonary Tuberculosis
  4.4.2. Post-Primary Pulmonary Tuberculosis
  4.4.3. Tuberculous Pleuritis
4.5. Miliary Tuberculosis
4.6. Genitourinary Tuberculosis
4.7. Osteoarticular Tuberculosis
4.8. Intestinal Tuberculosis and Peritonitis
4.9. Other Forms of Extrapulmonary Tuberculosis
4.10. Treatment Guidelines

Module 5. Infections by Non-Tuberculous Mycobacteria

5.1. Evolution
5.2. Current Problems
5.3. Mycobacterium Avium Complex
  5.3.1. Species included in the Complex
  5.3.2. Microbiological Characteristics
  5.3.3. Clinical Picture
  5.3.4. Treatment
5.4. Mycobacterium Kansasii
  5.4.1. Microbiological Characteristics
  5.4.2. Clinical Picture
  5.4.3. Treatment
5.5. Mycobacterium Ulcerans
  5.5.1. Microbiological Characteristics
  5.5.2. Clinical Picture
  5.3.3. Treatment
5.6. Mycobacterium Genavense
  5.6.1. Microbiological Characteristics
  5.6.2. Clinical Picture
  5.6.3. Treatment
5.7. Mycobacterium Haemophilum
  5.7.1. Microbiological Characteristics
  5.7.2. Clinical Picture
  5.7.3. Treatment
5.8. Mycobacterium Marinum
  5.8.1. Microbiological Characteristics
  5.8.2. Clinical Picture
  5.8.3. Treatment

5.9. Mycobacterium Scrofulaceum
- 5.9.1. Microbiological Characteristics
- 5.9.2. Clinical Picture
- 5.9.3. Treatment

5.10. Mycobacterium Gordonae
- 5.10.1. Microbiological Characteristics
- 5.10.2. Clinical Picture
- 5.10.3. Treatment

Module 6. Other Infections by Non-Tuberculous Mycobacteria

6.1. Evolution
6.2. Current Problems
6.3. Mycobacterium Abscesses
- 6.3.1. Microbiological Characteristics
- 6.3.2. Clinical Picture
- 6.3.3. Diagnosis and Treatment

6.4. Mycobacterium Chelonae
- 6.4.1. Microbiological Characteristics
- 6.4.2. Clinical Picture
- 6.4.3. Diagnosis and Treatment

6.5. Mycobacterium Fortuitum Complex
- 6.5.1. Microbiological Characteristics
- 6.5.2. Clinical Picture
- 6.5.3. Diagnosis and Treatment

6.6. Mycobacterium Malmoense
- 6.6.1. Microbiological Characteristics
- 6.6.2. Clinical Picture
- 6.6.3. Diagnosis and Treatment

6.7. Mycobacterium Simiae
- 6.7.1. Microbiological Characteristics
- 6.7.2. Clinical Picture
- 6.7.3. Diagnosis and Treatment

6.8. Mycobacterium Szulgai
- 6.8.1. Microbiological Characteristics
- 6.8.2. Clinical Picture
- 6.8.3. Treatment

6.9. Mycobacterium Xenopi
- 6.9.1. Microbiological Characteristics
- 6.9.2. Clinical Picture
- 6.9.3. Treatment

6.10. Other Non-Tuberculous Mycobacteria

Module 7. Mycobacterial Infections in VIH Patients

7.1. Epidemiology of TB/HIV Co-Infection
7.2. Pulmonary Tuberculosis in HIV-Infected Patients with >200 LTCD4
7.3. Extrapulmonary Tuberculosis in HIV-Infected Patients with >200 LTCD4
7.4. Tuberculosis in HIV-Infected Patients with <200 LTCD4
7.5. Tuberculous Meningitis
7.6. Atypical Mycobacterial Infections in VIH Patients
7.7. Diagnosis of Mycobacterial Infection in HIV Patients
7.8. Treatment of Tuberculosis in HIV Patients
7.9. Treatment of Atypical Mycobacterium Infection in HIV Patients
7.10. Latent Tuberculosis Infection in HIV Patients Treatment

Module 8. Mycobacterial Infections in Special Patients

8.1. Tuberculosis in Nephropathic Patients
8.2. Tuberculosis in Hepatopathic Patients
8.3. Tuberculosis in Elderly Patients
8.4. Tuberculosis in Patients Treated with Biologics
8.5. Tuberculosis in Oncohematologic Patients
8.6. Tuberculosis in Patients with Solid Organ Transplantation (Other Than Tx Pulm)
8.7. Tuberculosis in Patients with Pulmonary Pathology and Lung Transplantation
8.8. Infection by Non-Tuberculous Mycobacteria in Immunocompromised Patients
8.9. Non-Tuberculous Mycobacterial Infections in Patients with Pulmonary Pathology and Lung Transplantation
8.10. Management of Latent Tuberculosis in Immunocompromised Patients

Module 9. Mycobacterial Infections in Pediatrics

9.1. Tuberculosis in Childhood
9.2. Current Problem of Tuberculosis Infection in Childhood
9.3. Clinical Presentation. Classification of Risk Status in Mycobacterium Tuberculosis Complex Infection
  9.3.1. Clinical Forms of Tuberculosis Disease
  9.3.2. Exposure to Tuberculosis without Infection
  9.3.3. Latent Tuberculosis Infection (LTBI)
  9.3.4. Tuberculous Disease
9.4. Diagnosis of Tuberculosis in Pediatrics
  9.4.1. Medical History
  9.4.2. Immunological Tests
  9.4.3. Direct Tests to Identify Mycobacterium Tuberculosis Complex
  9.4.4. X-Ray Tests
  9.4.5. Other Diagnostic Tests
  9.4.6. Differential Diagnosis
9.5. Treatment of Tuberculosis in Pediatrics
  9.5.1. Latent Tuberculosis Infection (LTBI)
  9.5.2. Tuberculous Disease
  9.5.3. Resistant Tuberculosis
  9.5.4. Monitoring During Treatment
  9.5.5. Other Therapeutic Measures
9.6. Prevention of Tuberculosis in Pediatrics
  9.6.1. Post-Exposure Prophylaxis
  9.6.2. Vaccines
9.7. Special Tuberculosis Situations in Pediatrics
  9.7.1. Immunosuppressed Patients
  9.7.2. History of BCG Vaccination
  9.7.3. Extrapulmonary Tuberculosis
  9.7.4. Perinatal Tuberculosis
9.8. Epidemiology of Atypical Mycobacterial Infections in Pediatrics
9.9. Diagnosis of Atypical Mycobacterial Infections in Pediatrics
9.10. Clinical Manifestations and Therapeutic Management of Atypical Mycobacterial Infections in Pediatrics
  9.10.1. Lymphadenitis
  9.10.2. Pulmonary Infections
  9.10.3. Disseminated disease

Module 10. Leprosy

10.1. Evolution
10.2. Reservoirs and Transmission
10.3. Etiopathogenesis
10.4. Epidemiology
10.5. Clinical Classification
  10.5.1. Lepromatous Leprosy
  10.5.2. Tuberculoid Leprosy
  10.5.3. Borderline Leprosy
10.6. Pathologic Anatomy
10.7. Diagnosis
  10.7.1. Clinical Suspicion
  10.7.2. Sample Collection
  10.7.3. Common Techniques
  10.7.4. Molecular Techniques
10.8. Treatment
  10.8.1. Resistance Development
10.9. Prevention and Control
10.10. Relevant Aspects

06

Methodology

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

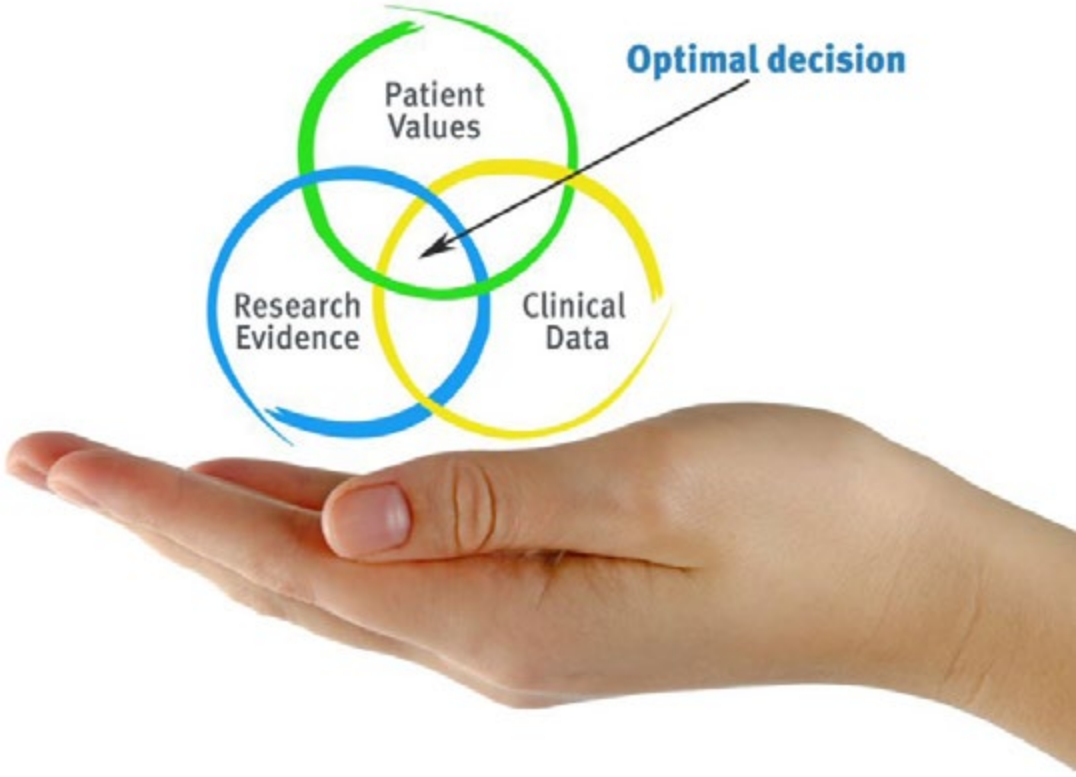
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

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.

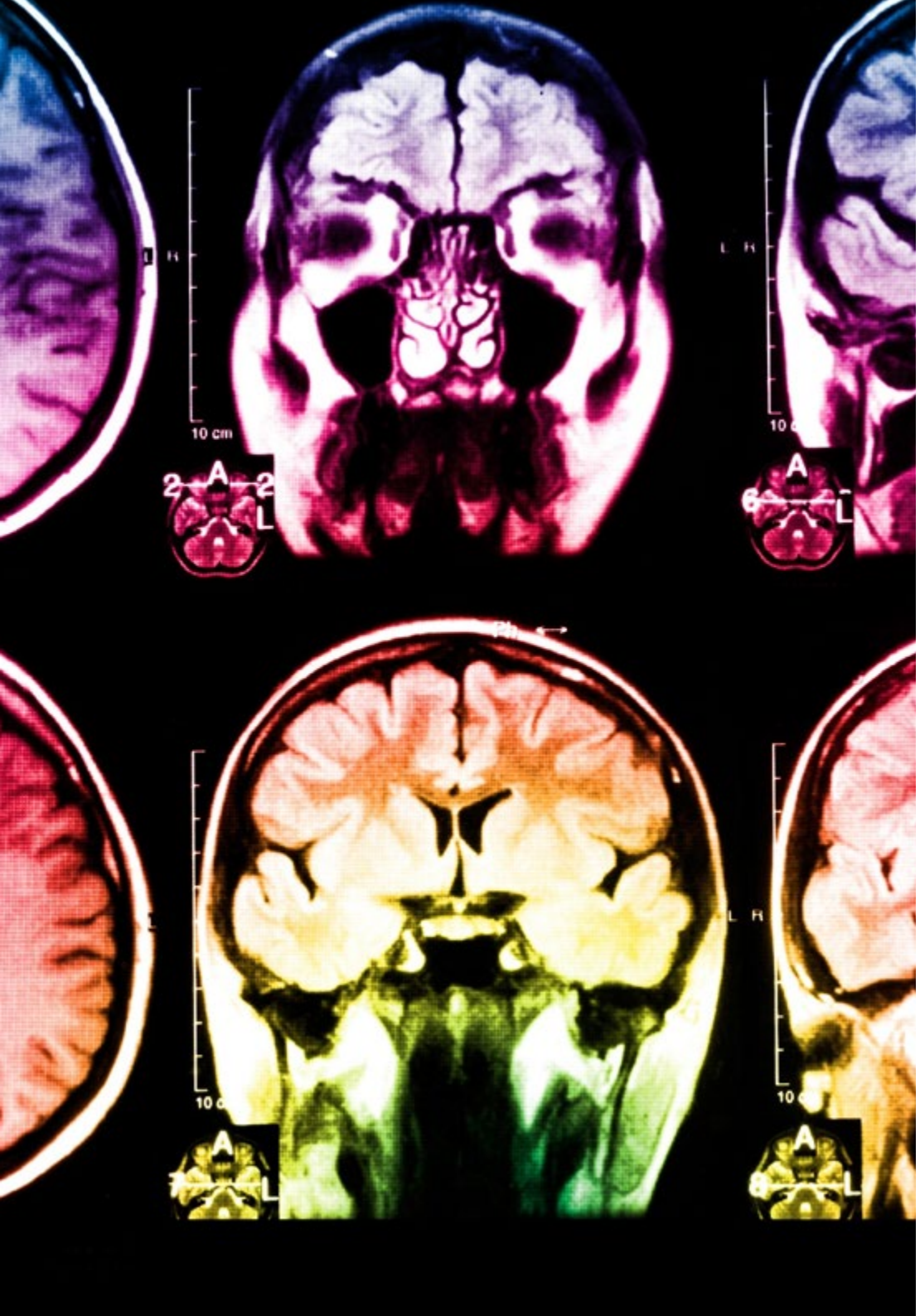
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

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 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.

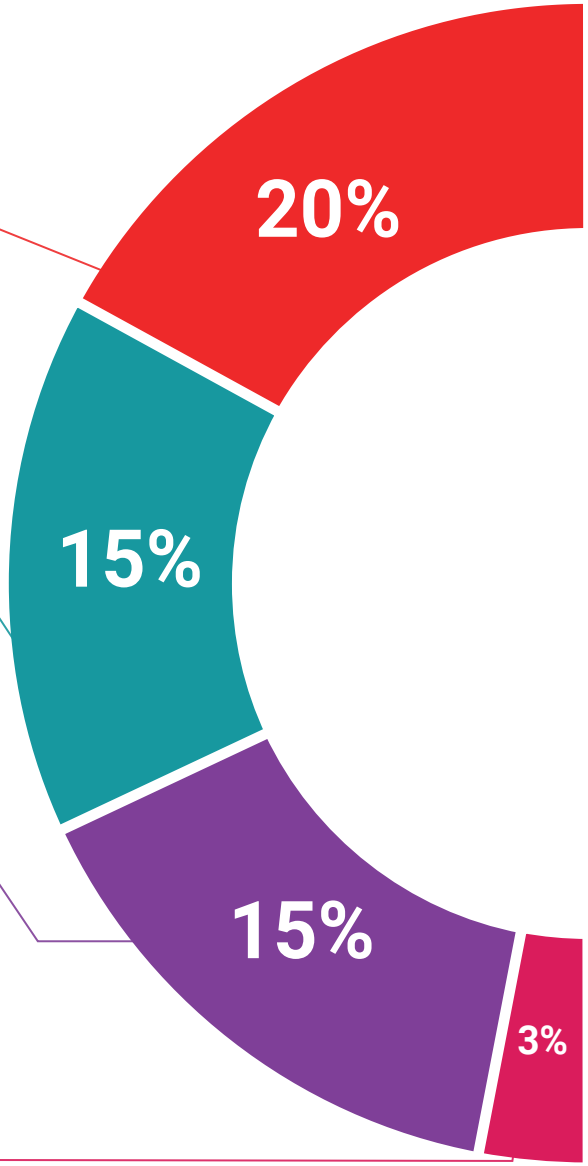
Interactive Summaries

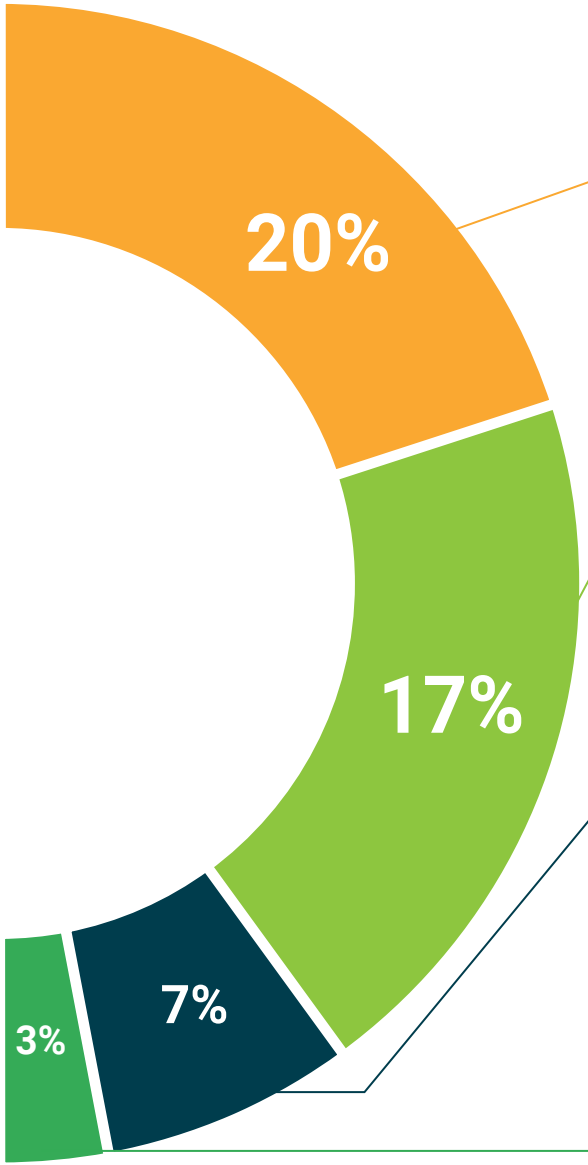
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.

07

Certificate

The Master's Degree in Tuberculosis guarantees students, in addition to the most rigorous and up-to-date education, access to a Master's Degree diploma issued by TECH Global University.

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 **Master's Degree diploma in Tuberculosis** 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: **Master's Degree in Tuberculosis**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**

tech global university

Mr./Ms. _____ with identification document _____
has successfully passed and obtained the title of:

Master's Degree in Tuberculosis

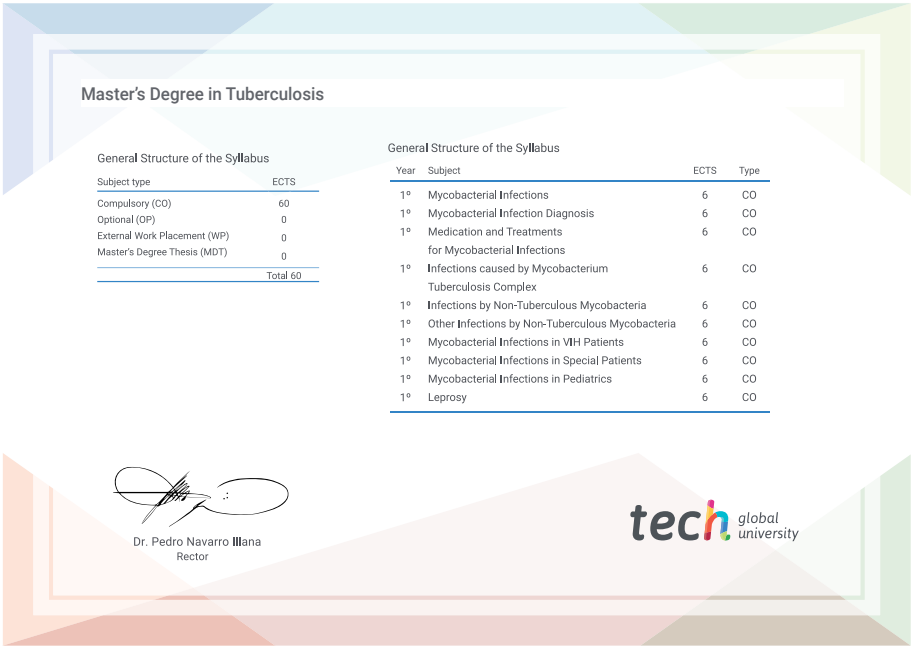
This is a program of 1,500 hours of duration equivalent to 60 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Rector

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


Master's Degree in Tuberculosis

General Structure of the Syllabus

Subject type	ECTS
Compulsory (CO)	60
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 60

General Structure of the Syllabus

Year	Subject	ECTS	Type
1º	Mycobacterial Infections	6	CO
1º	Mycobacterial Infection Diagnosis	6	CO
1º	Medication and Treatments for Mycobacterial Infections	6	CO
1º	Infections caused by Mycobacterium Tuberculosis Complex	6	CO
1º	Infections by Non-Tuberculous Mycobacteria	6	CO
1º	Other Infections by Non-Tuberculous Mycobacteria	6	CO
1º	Mycobacterial Infections in VIH Patients	6	CO
1º	Mycobacterial Infections in Special Patients	6	CO
1º	Mycobacterial Infections in Pediatrics	6	CO
1º	Leprosy	6	CO

Dr. Pedro Navarro Illana
Rector

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*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.

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Master's Degree
Tuberculosis

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Global University**
- Credits: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Master's Degree
Tuberculosis

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