

# Postgraduate Certificate

## Microbiology and Parasitology in Clinical Analysis





## Postgraduate Certificate Microbiology and Parasitology in Clinical Analysis

Course Modality: Online

Duration: 6 weeks

Certificate: TECH Technological University

6 ECTS Credits

Teaching Hours: 150 hours.

Website: [www.techtitute.com/medicine/postgraduate-certificate/microbiology-parasitology-clinical-analysis](http://www.techtitute.com/medicine/postgraduate-certificate/microbiology-parasitology-clinical-analysis)

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# 01

# Introduction

The specific knowledge needed in Microbiology and Parasitology requires professionals working in a clinical analysis laboratory, to be highly qualified and constantly updated in order to remain competitive in the labor market, but above all, to be able to safely perform their work in this highly precise field. In this complete course we offer you the possibility to achieve your qualification in a simple and very efficient way.

Through the most developed teaching techniques, you will learn the theory and practice of all the advances needed to work in a clinical analysis laboratory at a high level. With a structure and plan that is totally compatible with your personal and professional life.



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*Update your knowledge in the latest techniques and work systems in Microbiology and Parasitology in the clinical analysis laboratory, with the most efficient teaching system on the market"*



The study of Microbiology and Parasitology is essential in the daily practice of a Clinical Analysis Laboratory. Microorganisms and parasites are causative agents of a wide variety of pathologies. It is also important to bear in mind that many of these microbial agents make up a large part of the normal microbiota of healthy individuals, exerting numerous benefits when there is a balance. The interpretation of the results obtained in the microbiology laboratory depends on the quality of the samples received, as well as the knowledge and experience of the microbiologist, with sample processing being a critical step for the accuracy of the results.

The personnel of a Clinical Analysis and Microbiology Laboratory carry out a wide variety of tasks. This course offers the specialist and advanced material to allow the student to be able to perform clinical and microbiological analysis of human biological samples and choose the appropriate techniques in order to obtain the correct microbiological diagnosis. In this way, it will also contribute to clinical diagnosis, acting under quality and safety standards, and will provide the highest quality care to the infectious patient.

To achieve these objectives, the program focuses on pathogenic agents, studying the interaction between the infectious agent and the affected organism; highlighting the importance of bacterial, viral, mycotic and parasitic infections; as well as the tools that allow their diagnosis and main ways of treatment. This is all fundamental knowledge for the training of Clinical Laboratory specialists.

A compendium and deepening of knowledge that will lead you to excellence in your profession.

This **Postgraduate Certificate in Microbiology and Parasitology in Clinical Analysis** offers you the advantages of a high-level scientific, teaching, and technological course.

These are some of its most notable features:

- Latest technology in online teaching software.
- Highly visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand.
- Practical cases presented by practising experts.
- State-of-the-art interactive video systems.
- Teaching supported by telepractice.
- Continuous updating and recycling systems.
- Self-regulating learning: full compatibility with other occupations.
- Practical exercises for self-evaluation and learning verification.
- Support groups and educational synergies: questions to the expert, debate and knowledge forums.
- Communication with the teacher and individual reflection work.
- Content that is accessible from any fixed or portable device with an Internet connection.
- Supplementary documentation databases are permanently available, even after the course.



*With this Course you will be able to combine high intensity training with your personal and professional life, achieving your goals in a simple and real way”*

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*A highly skilled course which will allow you to become a highly competent professional in a clinical analysis laboratory”*

The teachers of this course are professionals currently working in a modern and accredited Clinical Laboratory, with a very solid training base and up to date knowledge in both scientific and purely technical disciplines.

In this way, we ensure that we provide you with the training update we are aiming for. A multidisciplinary team of professionals trained and experienced in different environments, who will cover the theoretical knowledge in an efficient way, but, above all, will put the practical knowledge derived from their own experience at the service of the course: one of the differential qualities of this course.

This mastery of the subject is complemented by the effectiveness of the methodology used in the design of this course in Microbiology and Parasitology. Developed by a multidisciplinary team of experts, it integrates the latest advances in educational technology. This way, you will be able to study with a range of comfortable and versatile multimedia tools that will give you the operability you need in your training.

The design of this program is based on Problem-Based Learning: an approach that conceives learning as a highly practical process. To achieve this remotely, we will use telepractice: with the help of an innovative interactive video system, and learning from an expert, you will be able to acquire the knowledge as if you were actually dealing with the scenario you are learning about. A concept that will allow you to integrate and fix learning in a more realistic and permanent way.

*A program created and directed by active professionals who are experts in this field of work, which makes this course a unique opportunity for professional growth.*

*The learning in this Postgraduate Certificate is developed through the most performed didactic methods in online teaching to guarantee that your efforts produce the best results possible.*



# 02 Objectives

The objective of this training is to offer professionals who work in clinical analysis laboratories, the necessary knowledge and skills to perform their duties using the most advanced protocols and techniques of the moment. Through a study plan totally adapted to the student, this Postgraduate Certificate will progressively allow you to acquire the skills that will push you towards a much higher professional level.







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*The latest advances in microbiology and parasitology laboratory techniques and procedures in a high-intensity course that will give you a professional boost in just a few weeks"*



## General Objective

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- ♦ Examine the etiological, pathogenic, epidemiological, treatment and diagnostic bases of the main microbial and parasitic diseases affecting human beings.
- ♦ Apply the acquired knowledge to the control of transmittable infectious diseases, both in the hospital and the out-of-hospital environment.
- ♦ Acquire appropriate skills to select the correct diagnostic method with the consequent preparation of a report on the efficiency of the techniques employed.
- ♦ Develop specialised knowledge to carry out a good organization and management of the services in a microbiology clinic. Coordinate activities and teams, and adapt them to the needs and resources available.
- ♦ Acquire advanced epidemiological knowledge to anticipate and avoid the factors that cause or condition the acquisition of infectious diseases.
- ♦ Gain skills to work in a clinical laboratory, research or teaching team, recognising the specific responsibilities needed in each speciality field.
- ♦ Provide advanced, specialized, multidisciplinary and up-to-date training, with an academic and scientific approach, oriented to a career in the clinical field or as a professional in R&D.





## Specific Objectives

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- ♦ Acquire advanced knowledge in Clinical Microbiology and Parasitology. Study the main infectious diseases of clinical interest.
- ♦ Identify disease-causing microorganisms in humans, to understand the pathophysiology and to practice detection and diagnostic techniques within a framework of responsibility and health safety.
- ♦ Organize the preparation of necessary material for its use in the Microbiology laboratory and check for sterility when appropriate. Know the basis and operation of any culture environment in order to use it to perform the different tests used in the microbiology laboratory.
- ♦ Correctly handle the different apparatus and equipment used in the Microbiology laboratory.
- ♦ Establish a proper functioning through a registration system for sample collection and processing.
- ♦ Design specific work protocols for each pathogen, selecting the appropriate parameters for its correct diagnosis, based on criteria of effectiveness and efficiency.
- ♦ Interpret antimicrobial or antiparasitic sensitivity in order to provide the best treatment.
- ♦ Know the new techniques used for the identification of pathogens.
- ♦ Establish proper communication between the laboratory and the clinic.
- ♦ Promote and monitor compliance with internal and external quality controls and safety standards.



*A boost to your CV that will give you the competitiveness of the best prepared professionals in the labor market"*

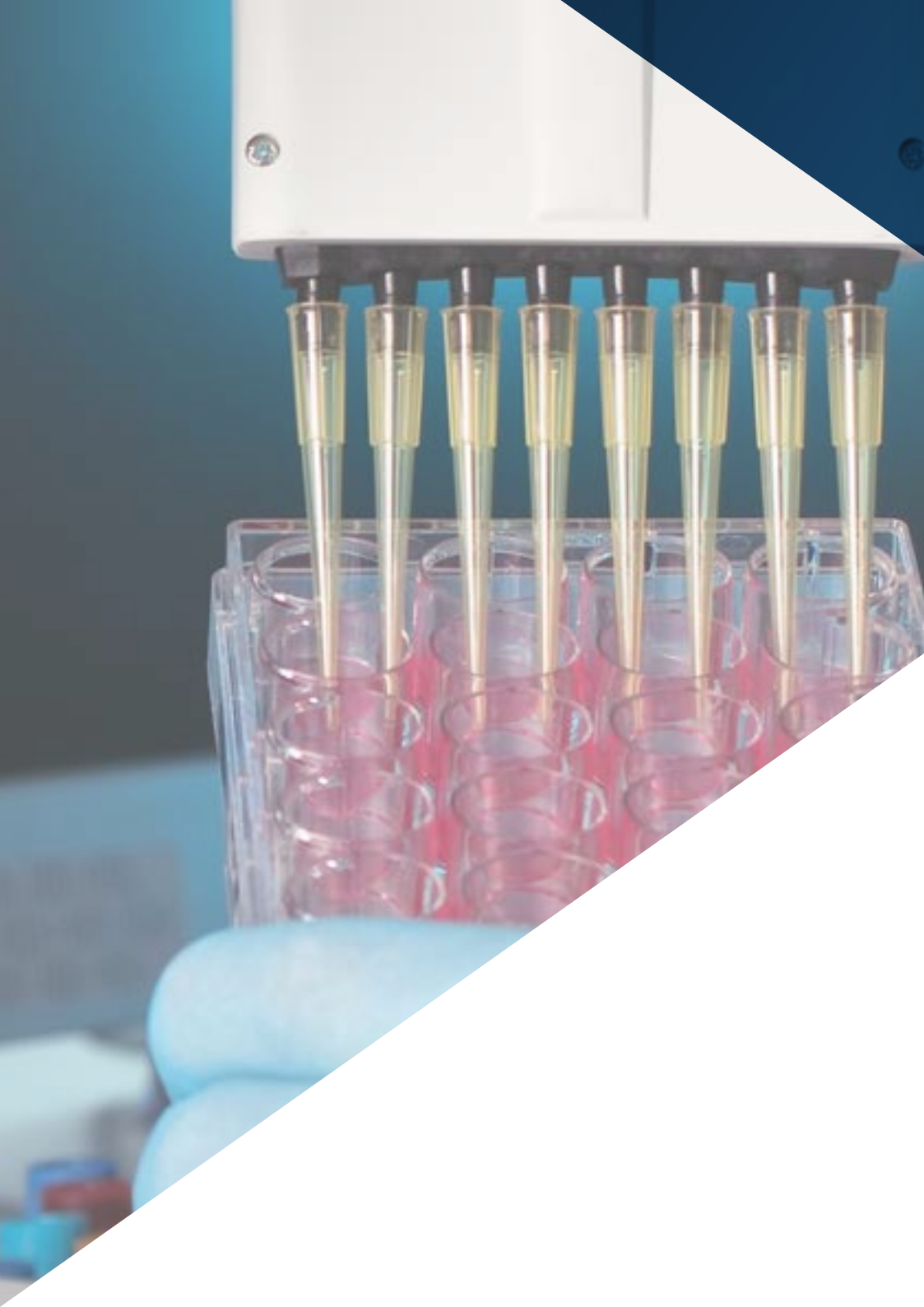
03

# Course Management

For our course to be of the highest quality, we are proud to work with a teaching staff of the highest level, chosen for their proven track record. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.







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*An impressive teaching staff, made up of professionals from different areas of expertise, will be your teachers during your training: a unique opportunity not to be missed”*



## Management



### Cano Armenteros, Montserrat

- ♦ Bachelor's Degree in Biology. University of Alicante.
- ♦ Master's Degree in Clinical Trials University of Seville.
- ♦ Official Professional Master's Degree in Primary Care Research by the Miguel Hernández University of Alicante for the Doctorate Recognition from the University of Chicago, USA Outstanding.
- ♦ Certificate of Pedagogical Aptitude ( CAP ) University of Alicante.

## Professors

### Tapia Poza, Sandra

- ♦ Degree in Biology from the University of Alcalá de Henares 2018.
- ♦ Master's Degree in Microbiology and Parasitology: Research and Development from the Complutense University of Madrid, 2019.
- ♦ Degree in Biology from the University of Alcalá de Henares, 2018.
- ♦ Master's Degree in Microbiology and Parasitology: Research and Development from the Complutense University of Madrid, 2019.
- ♦ Postgraduate Course in Clinical Analysis and Hematology Laboratory (San Jorge University, 2020)
- ♦ University Specialization Course in Biostatistics Applied to Health Sciences (European University Miguel de Cervantes, 2020)



# 04

# Structure and Content

The contents of this Postgraduate Certificate course have been developed by the different experts on this course, with a clear purpose: to ensure that our students acquire each and every one of the necessary skills to become true experts in this field.

A complete and well-structured program that will take you to the highest standards of quality and success.





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*A comprehensive and effective course that will allow you to learn while you continue with your normal daily life, with an intense program designed to be efficient and flexible”*

## Module 1. Microbiology and Parasitology

- 1.1. General Concepts of Microbiology
  - 1.1.1. Structure of Microorganisms
  - 1.1.2. Nutrition, Metabolism and Microbial Growth
  - 1.1.3. Microbial Taxonomy
  - 1.1.4. Microbial Genomes and Genetics
- 1.2. Study of Infectious Bacteria
  - 1.2.1. Gram Positive Cocci
  - 1.2.2. Gram Negative Cocci
  - 1.2.3. Gram Positive Bacilli
  - 1.2.4. Gram Negative Bacilli
  - 1.2.5. Other Bacteria of Clinical Interest
    - 1.2.5.1. Legionella Pneumophila
    - 1.2.5.2. Mycobacteria
- 1.3. General Techniques in Microbiology
  - 1.3.1. Processing of Microbiological Samples
  - 1.3.2. Types of Microbiological Samples
  - 1.3.3. Planting Techniques
  - 1.3.4. Types of Staining in Microbiology
  - 1.3.5. Current Microorganism Identification Techniques
    - 1.3.5.1. Biochemical Tests
    - 1.3.5.2. Manual or Automatic Commercial Systems and Multitest Galleries
    - 1.3.5.3. MALDI TOF Mass Spectrometry
    - 1.3.5.4. Molecular Tests
      - 1.3.5.4.1. 16S rRNA
      - 1.3.5.4.2. 16S-23S rRNA
      - 1.3.5.4.3. 23S rRNA
      - 1.3.5.4.4. rpoB Gene
      - 1.3.5.4.5. gyrB Gene
    - 1.3.5.5. Serological Diagnosis of Microbial Infections





- 1.4. Antimicrobial Sensitivity Tests
  - 1.4.1. Antimicrobial Resistance Mechanisms
  - 1.4.2. Sensitivity Test
  - 1.4.3. Antibacterials
- 1.5. Study of Viral Infections
  - 1.5.1. Basic Principles of Virology
  - 1.5.2. Taxonomy
  - 1.5.3. Viruses Affecting the Respiratory System
  - 1.5.4. Viruses Affecting the Digestive System
  - 1.5.5. Viruses Affecting the Central Nervous System
  - 1.5.6. Viruses Affecting the Reproductive System
  - 1.5.7. Systemic Viruses
- 1.6. General Techniques in Virology
  - 1.6.1. Processing of Samples
  - 1.6.2. Laboratory Techniques for Viral Diagnosis
  - 1.6.3. Antivirals
- 1.7. Most Common Fungal Infections
  - 1.7.1. General Information on Fungi
  - 1.7.2. Taxonomy
  - 1.7.3. Primary Mycoses
  - 1.7.4. Opportunist Mycoses
  - 1.7.5. Subcutaneous Mycoses
  - 1.7.6. Cutaneous and Superficial Mycoses
  - 1.7.7. Mycosis of Atypical Etiology
- 1.8. Diagnostic Techniques in a Clinical Mycology
  - 1.8.1. Processing of Samples
  - 1.8.2. Study of Superficial Mycoses
  - 1.8.3. Study of Subcutaneous Mycoses
  - 1.8.4. Study of Deep Mycoses
  - 1.8.5. Study of Opportunist Mycoses
  - 1.8.6. Diagnostic Techniques
  - 1.8.7. Antifungal
- 1.9. Parasitic diseases
  - 1.9.1. General Concepts of Parasitology
  - 1.9.2. Protozoa
    - 1.9.2.1. Amoeba (Sarcodina)
    - 1.9.2.2. Ciliates (Ciliophora)
    - 1.9.2.3. Flagellates (Mastigophora)
    - 1.9.2.4. Apicomplexa
    - 1.9.2.5. Plasmodium
    - 1.9.2.6. Sarcocystis
    - 1.9.2.7. Microsporidiosis
  - 1.9.3. Helminths
    - 1.9.3.1. Nematodes
    - 1.9.3.2. Platyhelminthes
      - 1.9.3.2.1. Cestodes
      - 1.9.3.2.2. Trematodes
  - 1.9.4. Arthropods
- 1.10. Diagnostic Techniques in a Clinical Parasitology
  - 1.10.1. Processing of Samples
  - 1.10.2. Diagnostic Methods
  - 1.10.3. Antiparasitics



*A comprehensive teaching program, structured in well-developed teaching units, oriented towards learning that is compatible with your personal and professional life"*

05

# Methodology

This training program provides you with a different way of learning. Our methodology uses a cyclical learning approach: ***Re-learning***.

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



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

## At TECH we use the Case Method

In a given situation, what would you do? Throughout the program, you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is abundant scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

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



According to Dr. Gervas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching potential 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 professional medical practice.



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

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

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





## Re-Learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

Our University is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases.

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



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

With this methodology we have trained more than 250,000 physicians with unprecedented success, in all clinical specialties regardless of the surgical load. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

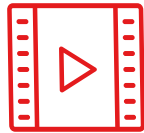
*Re-learning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

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

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



In this program you will have access to the best educational material, prepared with you in mind.



### Study Material

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

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



### Educational Techniques and Procedures on Video

We introduce you to the latest techniques, with the latest educational advances, and at the forefront of education. All this, in first person, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



### Interactive Summaries

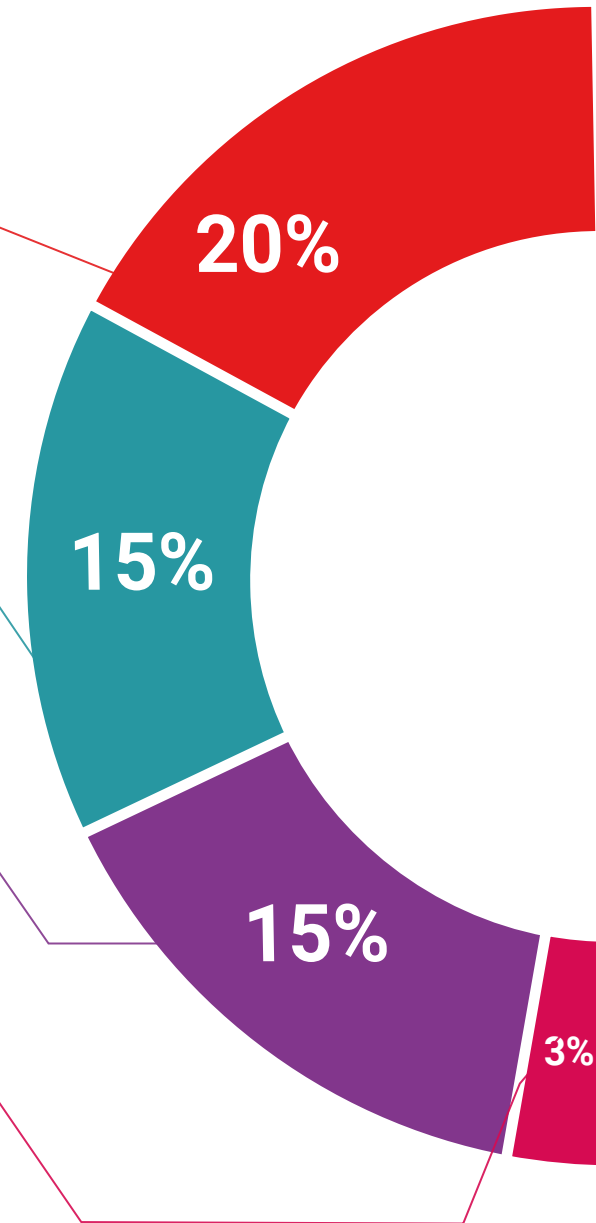
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge. This unique training system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

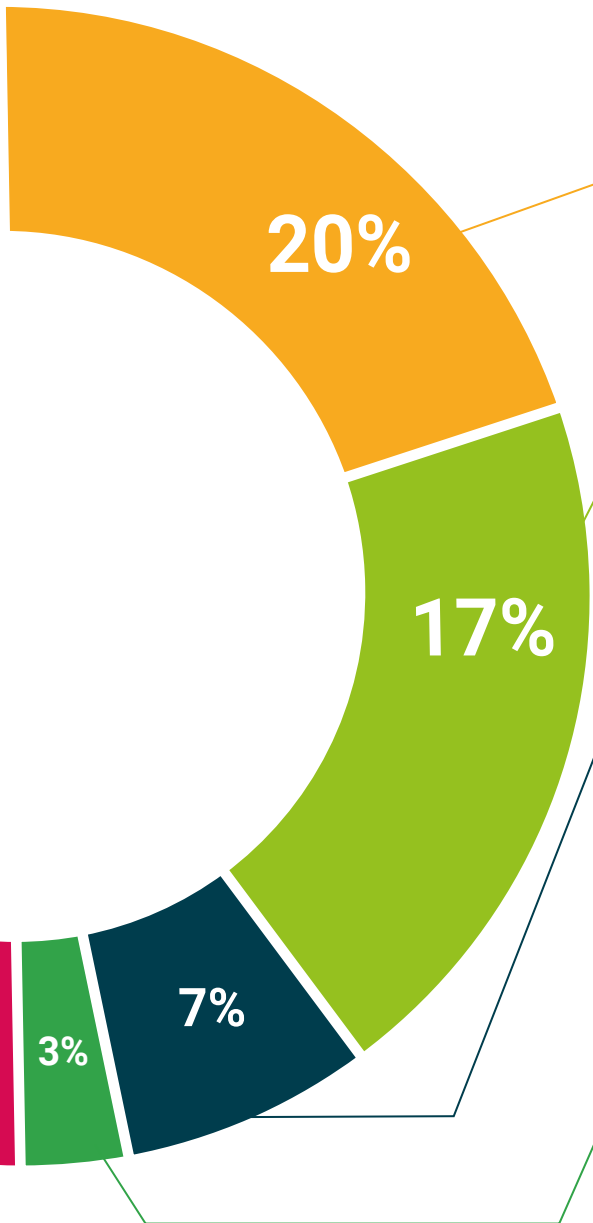


### Additional Reading

By participating in this course you will have access to a virtual library where you will be able to complement and keep your training up-to-date with the latest articles on the subject, consensus documents, international guidelines.

An invaluable resource that you will be able to use even when you finish your course with us.





**Expert-Led Case Studies and Case Analysis**

Effective learning ought to be contextual. Therefore, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



**Testing & Re-Testing**

We periodically evaluate and re-evaluate your knowledge throughout the program through assessment and self-assessment activities and exercises: so that you can see if you are achieving your goals.



**Learning From an Expert**

Observing an expert performing a task is the most effective way of learning. It is called Learning From an Expert: a proven way to reinforce knowledge and memory of what has been learned. For this reason, we include this type of learning in our course classes.

There is scientific evidence suggesting that observing third-party experts can be useful. Learning from an expert strengthens knowledge and memory, and generates confidence in our future difficult decisions.



**Quick Action Guides**

We offer you the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning.





06

# Certificate

The **Postgraduate Certificate in Microbiology and Parasitology in Clinical Analysis** guarantees, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by **TECH Technological University**.





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*Include in your training a Postgraduate Certificate in Microbiology and Parasitology in Clinical Analysis: a highly qualified added value for any medical professional"*

This **Postgraduate Certificate in Microbiology and Parasitology in Clinical Analysis** contains the most complete and up-to-date scientific program on the market.

After students have passed the assessments, they will receive their Postgraduate Certificate issued **TECH Technological University**.

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

Title: **Postgraduate Certificate in Microbiology and Parasitology in Clinical Analysis**

ECTS: **6**

Official Number of Hours: **150**



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

health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development languages  
virtual classroom

**tech** technological  
university

**Postgraduate Certificate**  
Microbiology and  
Parasitology  
in Clinical Analysis

Course Modality: Online

Duration: 6 weeks

Certificate: TECH Technological University

6 ECTS Credits

Teaching Hours: 150 hours.



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