Postgraduate Certificate
Microbiology and Public Health

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Postgraduate Certificate

Microbiology and Public Health

- Modality: **online**
- Duration: **12 weeks**
- Certificate: **TECH Technological University**
- Dedication: **16h/week**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/engineering/postgraduate-certificate/microbiology-public-health**

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01

Introduction

The scarcity of resources, the pollution of the seas or the abuse of the use of raw materials has led to an imbalance in the environment, which requires urgent intervention to solve a global problem. A challenge that has found in Microbiology a determining link to be able to recover the natural order through the introduction, for example, of microorganisms in water treatment. Recent studies in this field make it necessary for the Environmental Engineering professional to keep up to date with the latest developments. This is why TECH Technological University offers this advanced and intensive program, which will lead students to delve into quantitative ecology, biomass or the effects of pollution on people. All of this, in addition to multimedia teaching resources and a Relearning method, which reduces the study hours.

This Postgraduate Certificate will keep you up to date on the latest developments in Microbiology and Public Health"

In recent years, the scientific community has become increasingly concerned about the effects of pollution on human health and the direct relationship of certain toxic components with respiratory and nervous system diseases. At the same time, Microbiology has been working to respond to a global environmental problem.

Within this scenario, the Environmental Engineering professional is key, since their knowledge of microbial diversity and its importance in the biosphere can be decisive in the creation of projects that favor the treatment of waste or the conservation of the environment. Due to the increased awareness and demand of companies to find pollution solutions, this Certificate in Microbiology and Public Health was created.

During this program, which lasts only 12 weeks, the graduate will obtain the most advanced and up-to-date scientific information on biomining techniques, microbial control of pests and disease-causing populations, and the processes that cause pollution in the environment. Additionally, students are provided with innovative teaching tools, which are part of a syllabus designed with a theoretical-practical approach.

Furthermore, thanks to the case studies provided by the specialized teaching team that is part of this program, the professional will obtain information and methodologies that can be integrated into their daily practice.

The professional has before him an excellent opportunity to progress in their career in the field of Environmental Engineering through a Postgraduate Certificate, which can be taken comfortably, at any time and wherever they wish. Only an electronic device with Internet connection is needed to view the syllabus hosted on the virtual platform. In addition, you have the freedom to distribute the teaching load according to your needs, providing flexibility that allows you to obtain a quality education, compatible with the most demanding responsibilities.

This **Postgraduate Certificate in Microbiology and Public Health** contains the most complete and up-to-date program on the market. The most important features include:

- The development of case studies presented by experts of Environmental Engineering
- 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 self-assessment can be used 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

The most advanced content on the application of microorganisms in the resolution of environmental problems is available to you 24 hours a day"

This Postgraduate Certificate will allow you to take a step further in your professional career thanks to the exhaustive knowledge about the relationship between diseases and pollution"

It offers a dynamic and visual insight into the different types of tests and parameters currently used to assess toxicity.

This Postgraduate Certificate will provide you with an introduction to the latest aspects of biodeterioration control and soil management.

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 during the academic year For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

Objectives

Students who enroll in this university program will obtain the essential learning to improve their professional career as an Environmental Engineer in 6 weeks. For this purpose, it includes video summaries, detailed videos, complementary readings and case studies, which will lead you to understand the dynamics of microbial communities, to identify the mode of action of different types of toxins on humans or to use microorganisms for waste treatment.

In only 12 weeks, you will gain advanced learning in Environmental Epidemiology thanks to this university program"

General Objectives

- Acquire basic knowledge of science and use its results, integrating them with social, economic, legal and ethical fields for the identification of environmental problems
- Develop and practice the necessary skills to work in an Environmental Microbiology laboratory
- Expand the capacity to integrate experimental evidence obtained in field studies
- Identify the mode of action of different types of toxins at the molecular, cellular and systemic levels

TECH provides you with an educational program, with no on-site or fixed schedule classes. Designed for professionals like you"

Specific Objectives

- Identify and understand the basis of microbial diversity and its role in the biosphere
- Know and understand the physiological state of microorganisms in the environment and the dynamics of microbial communities
- Understand modern techniques to estimate and interpret microbial biodiversity, and assess their potential application in environmental and industrial processes
- Analyze the importance of using microorganisms to solve environmental problems: water supply treatment, wastewater treatment and biomining techniques
- Understand the processes toxins undergo upon entering a living organism and the response mechanisms that are activated to counteract their impact
- Know the different methods used to assess toxicity and the requirements that validate them
- Understand the mechanisms of toxicity at a cellular level
- Learn the toxic effects on different organs and systems of living beings

03

Structure and Content

TECH Technological University's objective is to offer the Engineering professional a quality program, and for this purpose, it uses the latest technology applied to academic teaching. In this way, students obtain the most advanced content in Microbiology and Public Health in a more attractive and visual way. Furthermore, the case studies provided by the experts who are part of this online program will bring you closer to real situations with methodologies that you will be able to integrate into your daily work. Moreover, all of this with the freedom to access it whenever you want, from any device with Internet connection.

Enroll now in a Postgraduate Certificate that provides you with the most recent techniques and tools used in microbial pest control"

Module 1. Environmental Microbiology

1.1. History of Microbiology
- 1.1.1. History of Microbiology
- 1.1.2. Development of Axenic Culture
- 1.1.3. Relation between Microbiology and Environmental Sciences

1.2. Methods to Study Microorganisms
- 1.2.1. Microscopy and Microscopy
- 1.2.2. Grams Stain
- 1.2.3. Microorganism Cultures

1.3. Microbial Cell Structure
- 1.3.1. Bacteria
- 1.3.2. Protozoa
- 1.3.3. Fungi

1.4. Microbial Growth and Environmental Factors
- 1.4.1. Microbial Evolution
- 1.4.2. Genetic Evolutionary Basis
- 1.4.3. Biodiversity Evolution
- 1.4.4. Microbial Diversity

1.5. Microbial Metabolism
- 1.5.1. Catabolism
- 1.5.2. Anabolism
- 1.5.3. Biosynthetic Pathways

1.6. Microbial Communities and Ecosystems
- 1.6.1. Microbial Community Dynamics
- 1.6.2. Ecosystems

1.7. Quantitative Ecology: Number, Biomass and Activity
- 1.7.1. Sample Collection
- 1.7.2. Processing Samples
- 1.7.3. Hydro-Ecosphere
- 1.7.4. Litho-Ecosphere

1.8. Biogeochemical Cycles and Microbiology
- 1.8.1. Carbon Cycle
- 1.8.2. Hydrogen Cycle
- 1.8.3. Oxygen Cycle
- 1.8.4. Nitrogen Cycle
- 1.8.5. Sulfur Cycle
- 1.8.6. Phosphorus Cycle
- 1.8.7. Iron Cycle
- 1.8.8. Other Cycles

1.9. Virology
- 1.9.1. General Characteristics of Viruses
- 1.9.2. Herpes Virus
- 1.9.3. Hepatitis Virus
- 1.9.4. Immunodeficiency Virus

1.10. Microorganisms and the Environment
- 1.10.1. Microorganisms in Mineral and Energy Recovery and Fuel and Biomass Production
- 1.10.2. Microbial Pest and Disease-Causing Population Control
- 1.10.3. Ecological Aspects of Biodeterioration Control and Soil, Waste and Water Management

Module 2. Environmental Epidemiology and Public Health

2.1. General Concepts and Epidemiokinetics
- 2.1.1. Introduction to Epidemiology and Toxicology
- 2.1.2. Toxin Action Mechanisms
- 2.1.3. Toxin Entrance Routes

2.2. Toxicity Assessment
- 2.2.1. Types of Tests and Parameters for Toxicity Assessment
- 2.2.2. Toxicity Assessment in Medicines
- 2.2.3. Hormetins

2.3. Factors that Affect Toxicity
- 2.3.1. Physical Parameters
- 2.3.2. Chemical Parameters
- 2.3.3. Biological Parameters

2.4. Toxicity Mechanisms
- 2.4.1. Mechanisms at the Cellular and Molecular Levels
- 2.4.2. Damage at the Cellular Level
- 2.4.3. Survivability

2.5. Toxicity without Organotropism
- 2.5.1. Simultaneous Toxicity
- 2.5.2. Genotoxicity
- 2.5.3. Impact of Toxicity on Organisms and Ecosystems

2.6. Pollution and Public Health
- 2.6.1. Pollution Problems
- 2.6.2. Public Health Issues Related to Pollution
- 2.6.3. Health Effects of Pollution on Human Health

2.7. Main Types of Contaminants
- 2.7.1. Sources of Physical Pollution
- 2.7.2. Sources of Chemical Pollution
- 2.7.3. Biological Pollution Sources

2.8. Pollutant Entry Routes into Ecosystems
- 2.8.1. Pollution Entry Processes into the Environment
- 2.8.2. Sources of Pollution
- 2.8.3. The Significance of Pollution in the Environment

2.9. Pollutant Movement in Ecosystems
- 2.9.1. Pollutant Distribution Processes and Patterns
- 2.9.2. Local Pollution
- 2.9.3. Transboundary Pollution

2.10. Risk Assessment and Environmental Remediation Strategies
- 2.10.1. Remediation
- 2.10.2. Remediation of Polluted Areas
- 2.10.3. Future Environmental Problems

Know Microbiology and the environmental problems of the future thoroughly through this university program"

04

Methodology

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

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

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"

Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"

You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.

The student will learn to solve complex situations in real business environments through collaborative activities and real cases.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

> *Our program prepares you to face new challenges in uncertain environments and achieve success in your career"*

The case method is the most widely used learning system in the best faculties in the world. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

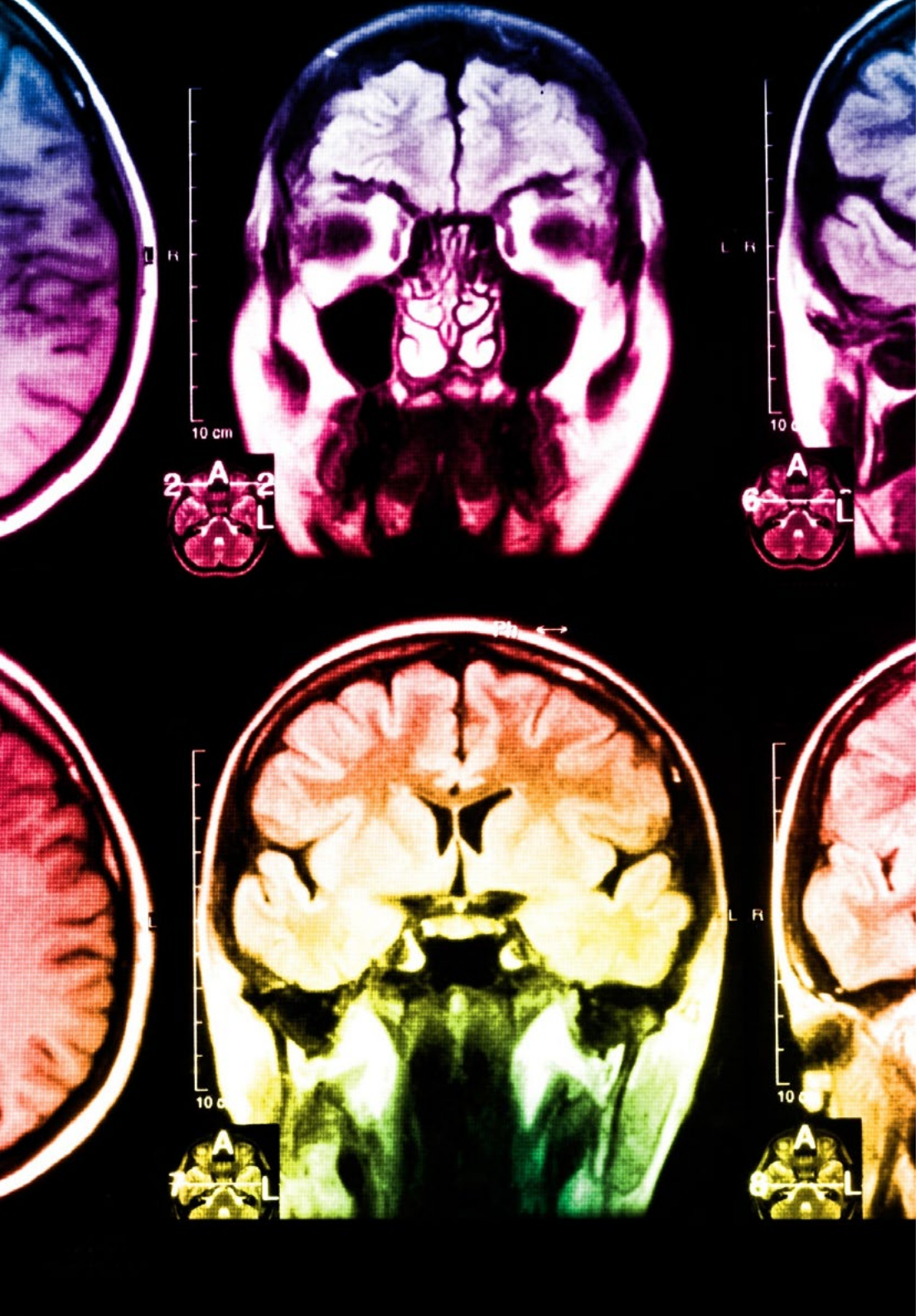
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH, you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



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. This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.

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.

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

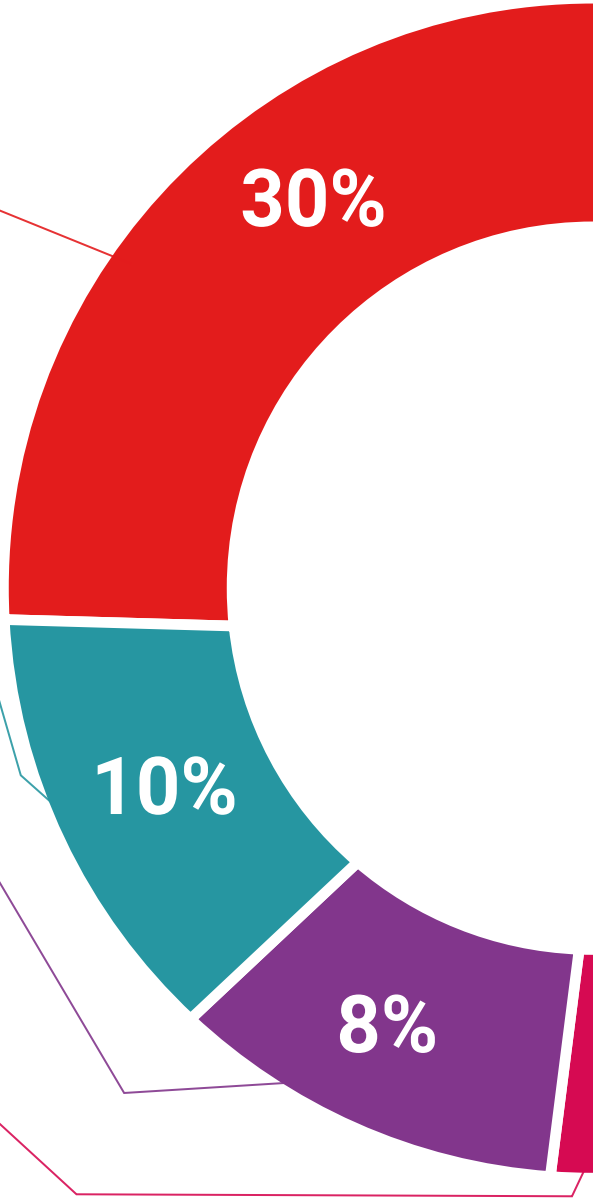
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

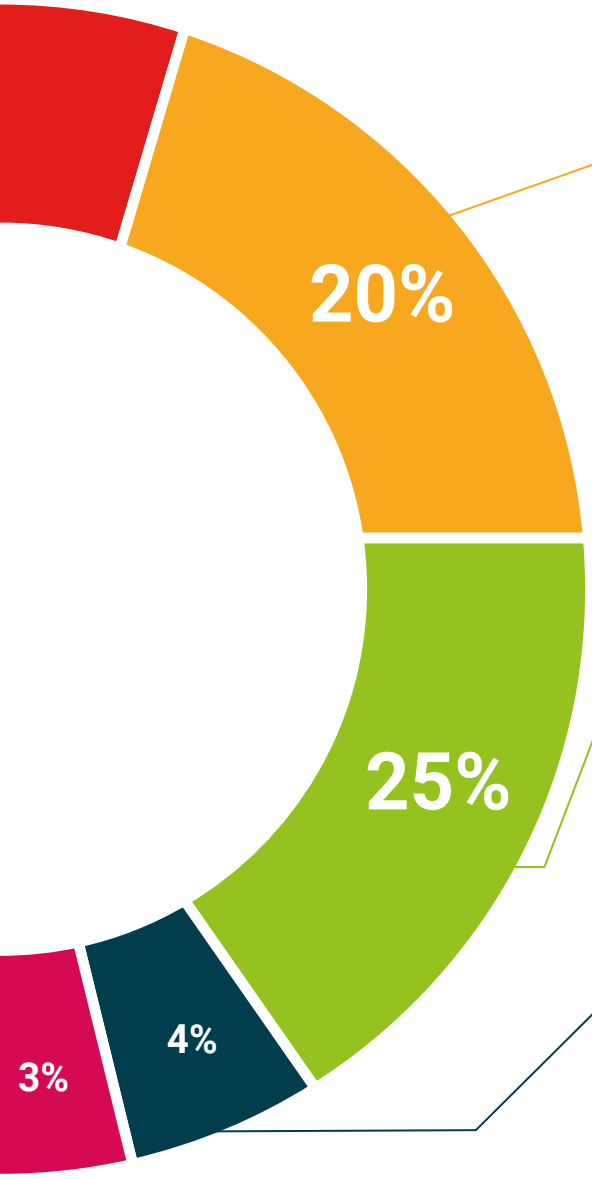
Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.

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.





Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.

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".

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.

05

Certificate

The Postgraduate Certificate in Microbiology and Public Health guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.

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

This **Postgraduate Certificate in Microbiology and Public Health** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

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

Title: **Postgraduate Certificate in Microbiology and Public Health**

Official Nº of Hours: **300 h.**


tech technological university

Awards the following

DIPLOMA

to

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

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Microbiology and Public Health

This is a qualification awarded by this University, equivalent to 150 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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

June 17, 2020

Tere Guevara Navarro

Dean

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

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

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