

# Postgraduate Certificate Environmental Engineering





## Postgraduate Certificate Environmental Engineering

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/pk/engineering/postgraduate-certificate/environmental-engineering](http://www.techtitute.com/pk/engineering/postgraduate-certificate/environmental-engineering)

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# 01

# Introduction

In recent decades, uncontrolled growth has led to inadequate management of finite natural resources, excessive pollution and an incalculable environmental impact. A situation that has led to an energy transition and considerable progress in waste reduction. A scenario where the Environmental Engineering professional is widely demanded by companies that require personnel capable of assessing the damage to the ecosystem or reduce emissions of the organization itself. For this reason, a program has been created to meet the needs of specialists seeking advanced knowledge on the main techniques and methods used for the treatment of soils, gases or the use of bacterial microorganisms for cleaning wastewater. All this, in a 100% online degree, accessible 24 hours a day, from a computer with an Internet connection.





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*A program with a theoretical-practical approach that will provide you with a solid knowledge base in Environmental Engineering"*



Greater social awareness of environmental care has led to the creation of projects that favor the reduction of pollution and the effects of toxic products on the environment and on the health of human beings. This progress has led to environmental engineering professionals being called upon by companies all over the world to reduce the impact of their production on the planet

However, this work requires a broad and well-founded knowledge of sustainability, water treatment or biological and chemical processes. That is why this academic institution has prepared this Postgraduate Certificate, which seeks to provide graduates with the most relevant and essential information to progress in their field of work

A program, where over 6 weeks, students will have access to the most innovative multimedia content, which will allow them to delve into the basic operations and facilities of environmental interest, in the overall balances of matter and energy, as well as the use of bacterial microorganisms in the treatment of waste. A syllabus with a global vision, at the same time as practical thanks to the simulations of cases provided by the specialists that make up this program

In addition, this university education has the Relearning method, used by TECH, given its effectiveness in consolidating learning and reducing the long hours of study so frequent in other methodologies

The professionals are, therefore, before a unique opportunity to advance with firm steps in their career thanks to an intensive Postgraduate Certificate that can be accessed comfortably whenever and wherever they want. All you need is an electronic device with an Internet connection to view the content hosted on the Virtual Campus. Moreover, given the flexibility of this 100% online university education, you will be able to combine this instruction with your personal responsibilities

This **Postgraduate Certificate in Environmental Engineering** 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 of the book provide technical and practical information on those 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



*This course provides you with the essential techniques to design a sedimentation tank for the removal of solids in water"*

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*This program introduces you to the latest studies on bacterial microorganisms and their use in the biodegradation of toxic substances"*

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.

Its multimedia content, developed with the latest educational technology, will provide the professionals with situated and contextual learning, i.e., a simulated environment that will provide an immersive education programmed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professionals must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the students will be assisted by an innovative interactive video system created by renowned experts.

*This program introduces you to the latest studies on bacterial microorganisms and their use in the biodegradation of toxic substances.*

*This course will enable you to design projects that use heat transport to reduce polluting gases.*



# 02 Objectives

The main goal of the syllabus of this program is to ensure that the professional who completes this course is able to progress in their professional field. To this end, TECH has designed this Postgraduate Certificate that will provide the most relevant knowledge on recent advances in Environmental Engineering, as well as the processes and techniques most commonly used for the conservation of ecosystems. A learning that will be possible thanks to the innovative content developed by experts in this specialty.







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*This university course will show you the best techniques to obtain an effective treatment of contaminated soils”*





## General Objectives

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- ◆ Approach the use of environmental and sustainability indicators as a tool to evaluate the state of a system
- ◆ Initiate the engineering design of some simple physical, chemical and biological systems
- ◆ Learn basic operations of water treatment
- ◆ Delve in the study of chemical and biological reactors



*You will obtain the necessary knowledge to be able to use the appropriate methodology for the separation of materials or compounds"*







## Specific Objectives

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- ◆ Proper use and identification of balance sheets as a method for system analysis
- ◆ Define and evaluate the necessary energy involved in a process, either for the transport of materials or for the modification of the state of a current
- ◆ Know how to use the methodologies to select an operation to separate materials or compounds in two-phase and three-phase systems
- ◆ Initiate treatment of contaminants for the recovery of aqueous streams





# 03

# Structure and Content

The effectiveness of the Relearning method, used by TECH in all its programs, will allow students who take this program to advance through this Postgraduate Certificate in a much more natural way, reducing even the long hours of study. Thus, they will be able to acquire the most advanced knowledge on global balances of matter and energy, sedimentation operations and their applications or biological processes in wastewater.







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*A program with a theoretical-practical approach that will provide you with a solid knowledge base in Environmental Engineering"*

## Module 1. Principles of Environmental Engineering

- 1.1. Introduction. General Concepts and Indicators
  - 1.1.1. Introduction
  - 1.2.1. Basic Concepts
  - 1.3.1. Magnitudes
  - 1.4.1. Magnitudes and Sustainability
- 1.2. Basic Operations and Facilities of Environmental Interest
  - 1.2.1. Introduction
  - 1.2.2. Water Treatment
  - 1.2.3. Basic Operations of Water Treatment
  - 1.2.4. Gas Treatment
  - 1.2.5. Soil Treatment
- 1.3. Global Balance Sheet of Matter and Energy
  - 1.3.1. Introduction and Concept of a Balance Sheet
  - 1.3.2. Global Balance Sheet of Matter and Energy
  - 1.3.3. General Expressions in a Balance Sheet
  - 1.3.4. Transaction Balance Sheet
  - 1.3.5. Work Method
  - 1.3.6. Enthalpy Changes
- 1.4. Transport Phenomena
  - 1.4.1. Introduction
  - 1.4.2. Definition of Transport Phenomena
  - 1.4.3. General Expressions
  - 1.4.4. Balance Sheets in Single-Phase Systems
  - 1.4.5. Balance Sheets in Single-Phase Laminar Flow Systems
  - 1.4.6. Balance Sheets in Single-Phase Turbulent Flow Systems
  - 1.4.7. Matter Transfer in a Single Phase Without Convective Motion
  - 1.4.8. Transport Phenomena in Two-Phase Systems
  - 1.4.9. Friction
- 1.5. Fluid Current Energy Balance Sheet
  - 1.5.1. Balance Sheet on a Moving Fluid Current
  - 1.5.2. Incompressible Fluids
  - 1.5.3. Compressible Fluids
- 1.6. Heat Transport
  - 1.6.1. Introduction
  - 1.6.2. Conduction
  - 1.6.3. Convection
  - 1.6.4. Radiation
  - 1.6.5. Emission and Absorption of Energy by the Earth
- 1.7. Sedimentation Operations
  - 1.7.1. Introduction
  - 1.7.2. Sedimentation Rate
  - 1.7.3. Design of a Sedimentation Tank
  - 1.7.4. Colloids and Floccs
  - 1.7.5. Delayed Sedimentation
  - 1.7.6. Environmental Applications
- 1.8. Adsorption
  - 1.8.1. Introduction
  - 1.8.2. Physical Adsorption
  - 1.8.3. Design
- 1.9. Adsorption
  - 1.9.1. Introduction
  - 1.9.2. Adsorbents
  - 1.9.3. Equilibrium Adsorption
  - 1.9.4. Adsorption Dynamics
  - 1.9.5. Adsorption in River Beds
  - 1.9.6. Design
- 1.10. Chemical and Biological Reactors
  - 1.10.1. Biological Processes in Sewage Water
  - 1.10.2. Bacterial Microorganisms
  - 1.10.3. Chemical Treatments
  - 1.10.4. Bacterial Growth
  - 1.10.5. Anaerobic Digestion





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*Enroll now in a Postgraduate Certificate that will allow you to be up to date on the techniques used in water treatment”*

04

# Methodology

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

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







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

## 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.

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

Title: **Postgraduate Certificate in Environmental Engineering**

Official N° of Hours: **150 h.**



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



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



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