

# Postgraduate Certificate Engineering and Construction Work for Municipal Wastewater Treatment Plants





## Postgraduate Certificate Engineering and Construction Work for Municipal Wastewater Treatment Plants

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/engineering/postgraduate-certificate/engineering-construction-work-municipal-wastewater-treatment-plants](http://www.techtute.com/us/engineering/postgraduate-certificate/engineering-construction-work-municipal-wastewater-treatment-plants)

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# 01

# Introduction

Wastewater is highly polluting and is therefore becoming an increasing problem for the environment. This has led to the construction in recent decades of numerous wastewater treatment plants that convert wastewater into freshwater suitable for irrigation, industrial processes or recreational purposes. But, in these facilities, it is necessary to have engineering professionals who are experts in the field, therefore, in this complete Postgraduate Certificate the professional will learn to take charge of both the project and the execution of the processes. In this way, they will be prepared to know in depth the stages of headworks, pre-treatment and primary, secondary and tertiary treatment in a wastewater treatment plant.





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*Start contributing to the sustainability of the planet today by working in the area of wastewater treatment"*

Environmental protection has been one of the main challenges of the water sector for many years. All actions and projects must address the protection of the environment to which we return water after use. For decades, the European Union has allocated considerable economic resources to the construction of wastewater treatment plants in those medium-sized urban centers that lacked them. At present, these policies are not only maintained, but have been strengthened, since the aim is to completely eliminate water discharged without any treatment and the requirements regarding the quality of the effluent received by the environment have been raised. This situation requires a professional with engineering knowledge in the design and execution of new construction and renovation of existing wastewater treatment plants.

In this sense, this Postgraduate Certificate course will provide an insight into the mechanisms of integral management of both the construction project and the actual construction of a wastewater treatment plant. In this way, tools and mechanisms will be established to enable economic control of the work, specifically in relation to compliance with the budget, purchasing management and coordination of subcontracted companies in the work process.

In order to continue the operation of an urban wastewater treatment plant in service while its refurbishment or expansion works are being carried out, a series of provisional works must be carried out. The keys to carry them out are shown in this module.

The site engineer in charge of both the project and the execution of the work will be prepared to know, in depth, the stages of headworks, pre-treatment and primary, secondary and tertiary treatment in a wastewater treatment plant. In this way, he will be able to coordinate the complete project of a WWTP and be responsible for the construction management of this type of treatment plant.

On the other hand, to ensure the proper operation of the treatment plants around the clock, it is necessary that the construction project reflects the necessary automation equipment. Therefore, this module will also show the elements that make this possible.

Enable the site engineer to more easily monitor budget control and certification of the execution of the work, as well as to be able to coordinate effectively with the client on these aspects, a topic on site control software is included.

This **Postgraduate Certificate in Engineering and Construction Work for Municipal Wastewater Treatment Plants** contains the most complete and up-to-date educational program in the market. Its most notable features are:

- ◆ The development of case studies presented by experts in engineering focused on the integral water cycle
- ◆ 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



*Leave your professional mark on the industry by learning how to perform the processes in an excellent way"*

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*You will learn how to carry out each and every one of the necessary processes within a wastewater treatment plant in an optimal and effective manner”*

The program's teaching staff includes professionals from sector who contribute their work experience to this 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 professional will be assisted by an innovative interactive video system created by renowned and experienced engineering experts.

*By studying here, you will raise your skills to another level and become a prestigious engineer.*

*Don't miss this great academic opportunity. It is the best in the market.*



# 02

# Objectives

TECH designs all its specializations with a single objective: to enable professionals to perform their work in a successful, effective and efficient manner. This Postgraduate Certificate is no exception, and to this end has a teaching staff that will accompany the student throughout the learning process. In the same way, the engineer will have a series of didactic material in multimedia format specially designed to help the student to internalize the learning in a deep way and, above all, with a real orientation towards professional practice.







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*TECH's goal is to help you study in a comfortable and efficient way. That's why we chose the online format for our programs"*



## General Objectives

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- ◆ Delve into key aspects of Urban Water Services Engineering
- ◆ Leadership of integrated water cycle departments
- ◆ Management of distribution and sanitation departments
- ◆ Management of drinking water treatment, desalination and purification plants
- ◆ Management of the technical office and studies of companies in the sector
- ◆ Mastering a strategic vision of the subject
- ◆ Strong knowledge of coordinating concessions and administrative relations
- ◆ Orient the student's professional activity towards the achievement of the water objective in the 2030 agenda
- ◆ Acquiring skills related to the implementation of the urban water system
- ◆ Being able to apply the latest technological innovations to set up an optimal management of the service





## Specific Objectives

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- ◆ Acquire the competences related to a site manager in the execution of wastewater treatment plants, the most relevant of which are: order management, subcontracting coordination and budget control
- ◆ Delve into the design criteria, as well as the most relevant aspects to be taken into account during the execution of the work in the main stages of a wastewater treatment plant
- ◆ Know in detail the commercial computer programs for the elaboration of budgets and work certifications before the client

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*You will achieve your goals thanks to our tools, and you will be accompanied along the way by leading professionals”*

03

# Course Management

By studying at this University, the student will have a high-quality teaching staff made up of professionals with years of experience and prestige in the area of study. This will ensure that the engineers, after studying at TECH, will be able to enter the professional arena in an efficient manner, placing themselves at the forefront of the profession and with the security of being able to carry out their daily practice based on the latest developments in the sector.





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*Learn from the best and become  
an expert in the field yourself"*

## International Guest Director

Mohammed Maadadi is a highly specialized engineer in the field of Water and Environment, with an outstanding track record in water resources management, both in the field of wastewater and drinking water. In this way, his interest in sustainable development and the optimization of urban services has led him to occupy leadership roles in large-scale innovative projects, always applying an approach of efficiency and sustainability. In addition, his commitment to the environment and engineering has positioned him as a reference in his field.

Throughout his career, he has worked in renowned companies, such as Veolia, where he has served as Director of the Industrial Wastewater Treatment Center in Quebec, Canada. There, he has led a multidisciplinary team, managing the operation and maintenance of complex wastewater and drinking water networks, always looking for solutions that optimize resources and minimize environmental impact. He has also worked as an Environment and Sustainable Development Engineer at the Ministry of Land Management, Urban Planning, Housing, Urban Policy in Rabat, Morocco, where he has consolidated his experience in the management of urban services and environmental policies.

Mohammed Maadadi has also stood out for his ability to lead teams in high-demanding situations, demonstrating a great capacity to negotiate contracts and manage administrative and budgetary resources. In addition to his strong academic background, he is a certified Project Manager Professional (PMP) and has been an E-MBA candidate, reinforcing his ability to manage complex projects with a long-term strategic vision. In turn, he has contributed to the development of new sanitation techniques and research in the field of Urban Water Services Engineering, publishing articles and studies that have served as a guide to improve practices in the sector.



## Mr. Maadadi, Mohammed

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- ♦ Director of the Industrial Wastewater Treatment Center at Veolia, Quebec, Canada
- ♦ Head of Water/Sanitation Works and Maintenance Department, Veolia, Africa
- ♦ Head of the Drinking Water Works and Maintenance Department, Veolia, Africa
- ♦ Hydraulics Engineer, Sanitation Works and Maintenance Office, Veolia, Africa
- ♦ Environment and Sustainable Development Engineer at the Ministry of Regional Planning, Urbanism, Housing, Urban Policy of Rabat, Morocco
- ♦ Master's Degree in Engineering, Process and Environmental Engineering, Hassan II University, Mohammedia
- ♦ Diploma in Technology, Urban and Environmental Engineering from Mohammed V University, Agdal

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*Thanks to TECH, you will be able to learn with the best professionals in the world”*

## Management



### Mr. Ortiz Gómez, Manuel

- ♦ Deputy to the head of the Water Treatment Department at FACSA
- ♦ Head of Maintenance at TAGUS, concessionaire of water and sewage services in Toledo
- ♦ Industrial Engineer at Jaime I University
- ♦ Postgraduate Degree in Innovation in Business Management from the Valencian Institute of Technology
- ♦ Executive MBA from EDEM
- ♦ Author of several papers and presentations at conferences of the Spanish Association of Desalination and Reuse and the Spanish Association of Water Supply and Sanitation



## Professors

### Mr. Salaix, Roquera, Carlos

- ◆ Professional in sectors related to urbanization, construction of wastewater treatment plants and water treatment and maintenance of supply and sanitation infrastructure networks
- ◆ Technical Engineer in Public Works, specializing in Transport and Urban Services, Polytechnic University of Valencia
- ◆ Master's Degree in Integrated Management PRL, Quality, Environment, Continuous Improvement (EFQM), Universitat Jaume I de Castellón
- ◆ Official Master's Degree in Occupational Risk Prevention (Hygiene, Safety, Ergonomics), Universitat Jaume I of Castellón

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*An impressive teaching staff, made up of professionals from different areas of expertise, will be your teachers during your specialization: a unique occasion that you cannot miss"*



# 04

# Structure and Content

The syllabus has been designed based on the requirements of engineering applied to the specificity of this sector, following the requirements proposed by the teaching team of this Postgraduate Certificate. Thus, a study plan has been established whose topics offer a broad perspective of the processes within a wastewater treatment plant from a global point of view for the sake of its application at an international level, incorporating all the fields of work involved in the development of its functions, both public and private.





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*You will have the most complete and up-to-date content library on the market. This will serve you as a support when it comes to carrying out your professional practice"*

## Module 1. Wastewater Treatment Plants. Engineering and Construction Execution

### 1.1. Auxiliary Stages

- 1.1.1. Pumping
- 1.1.2. Header Wells
- 1.1.3. Reliefs

### 1.2. Follow-Up of the Work

- 1.2.1. Management of Subcontracts and Orders
- 1.2.2. Economic Follow-Up
- 1.2.3. Deviations and Budget Compliance

### 1.3. General Diagram of a WWTP. Provisional Works

- 1.3.1. The Water Line
- 1.3.2. Provisional Works
- 1.3.3. BIM. Distribution of Elements and Interferences

### 1.4. Auxiliary Stages

- 1.4.1. Pumping
- 1.4.2. Header Wells
- 1.4.3. Reliefs

### 1.5. Pre-treatment

- 1.5.1. Stakeout
- 1.5.2. Execution and Connections
- 1.5.3. Finishing

### 1.6. Primary Treatment

- 1.6.1. Stakeout
- 1.6.2. Execution and Connections
- 1.6.3. Finishing



1.7. Secondary Treatment

- 1.7.1. Stakeout
- 1.7.2. Execution and Connections
- 1.7.3. Finishing

1.8. Tertiary Treatment

- 1.8.1. Stakeout
- 1.8.2. Execution and Connections
- 1.8.3. Finishing

1.9. Equipment and Automation

- 1.9.1. Suitability
- 1.9.2. Variants
- 1.9.3. Commissioning

1.10. Software and Certification

- 1.10.1. Stockpile Certification
- 1.10.2. Work certifications
- 1.10.3. Computer Programs

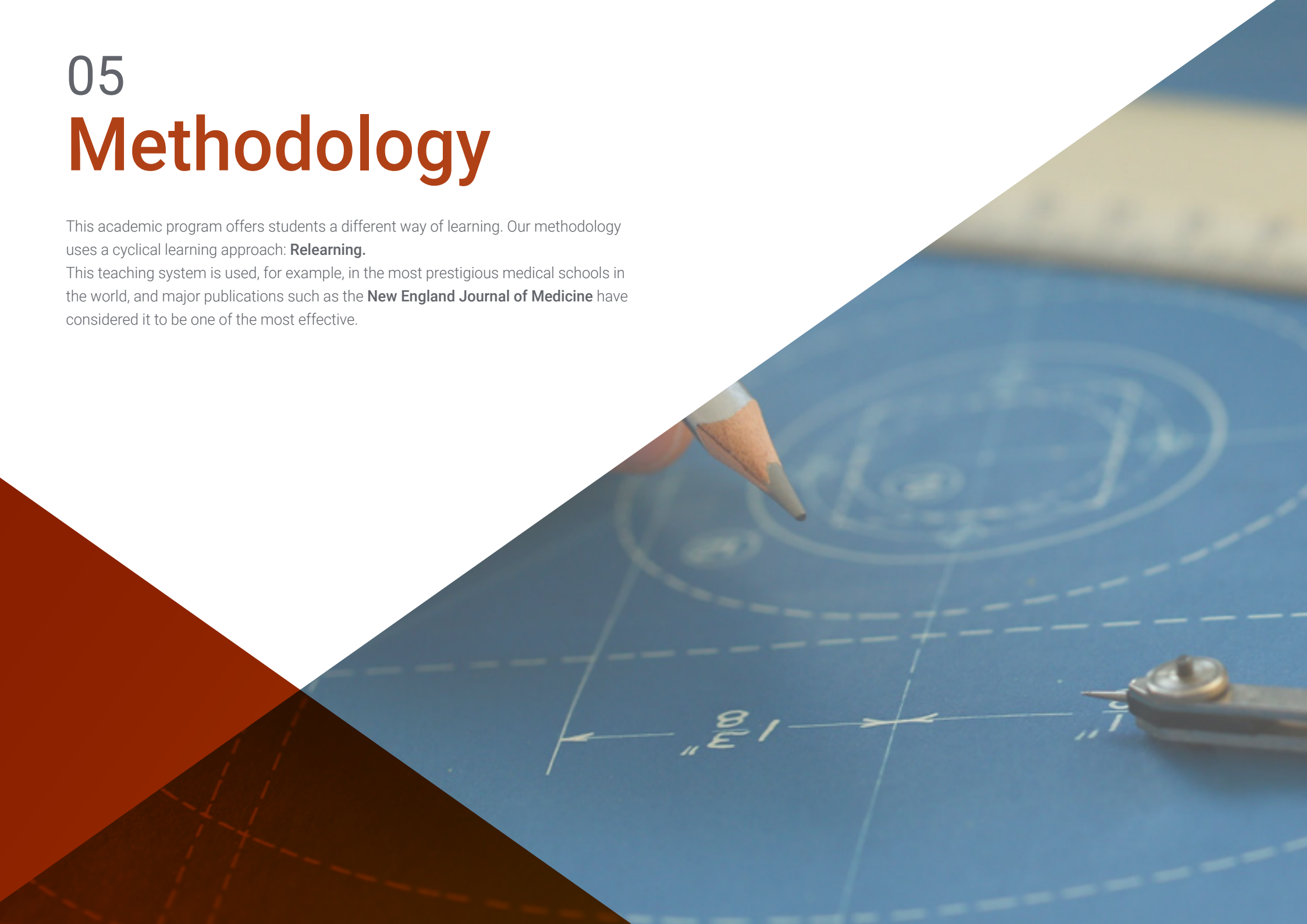
“*Study comfortably and effectively with TECH*”

05

# 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.



06

# Certificate

The Postgraduate Certificate in Engineering and Construction Work for Municipal Wastewater Treatment Plants guarantees students, in addition to the most rigorous and up to date education, access to a Postgraduate Certificate issued by TECH Global University.



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*Include in your specialization a Postgraduate Certificate in Engineering and Construction Work for Municipal Wastewater Treatment Plants, a highly qualified added value for any professional in this area"*

This program will allow you to obtain your **Postgraduate Certificate in Engineering and Construction Work for Municipal Wastewater Treatment Plants** 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.

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Modality: **online**

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