

# Postgraduate Certificate Urban Water Pumping Stations





## Postgraduate Certificate Urban Water Pumping Stations

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

Website: [www.techtute.com/us/engineering/postgraduate-certificate/urban-water-pumping-stations](http://www.techtute.com/us/engineering/postgraduate-certificate/urban-water-pumping-stations)

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# 01

# Introduction

This complete Postgraduate Certificate was created with the objective of providing students with in-depth knowledge that will allow them to understand from a global perspective the different applications of a pumping station and the type of needs that can be covered by an infrastructure of these characteristics. All this, by first defining the selection and design criteria for each solution available on the market, including novel simulation techniques using computational fluid analysis. This knowledge will enable the engineer to exercise his activity in the integral water cycle sector, offering efficient and innovative water lifting solutions, and thus, taking a step forward in their professional career.



A photograph of industrial water pumping station equipment, featuring blue pipes, a pressure gauge, and a white plastic container. The image is partially obscured by a large orange and white diagonal graphic.

“

*Learn to work in urban water pumping stations, leading large-scale projects with this complete Postgraduate Certificate that TECH offers you"*

The complete Postgraduate Certificate that TECH proposes on this occasion provides a complete vision of all aspects related to this essential stage in any drinking water distribution network and sanitation system. To guarantee the supply of an urban water service, the continuity in the operation of its pumping systems is key.

During the course of the academic program, the different applications where a pumping station can solve the need for water relief are shown, defining the selection and design criteria of each solution available on the market, including the novel simulation techniques by means of computational fluid analysis.

After the design phase, the challenge of installation, maintenance and control requires the professional responsible for the pumping stations to have a thorough knowledge of the usual problems of these installations. Through the extensive experience of the professionals involved in this Postgraduate Certificate the student will be able to learn first hand about the mistakes to avoid in each of these areas.

Finally, due to the demanding demand for process improvement in the sector, the module presents the most widely implemented technological innovations, so that students can apply them in their current position, thus acquiring a differential value in their skills. A series of real singular designs are also presented, which will help students to extrapolate them to the projects they face.

Therefore, the Postgraduate Certificate in Urban Water Pumping Stations specializes engineers working in the integral water cycle to design efficient and innovative water lifting solutions. In addition, it will provide the keys for optimal maintenance and control in order to ensure the continuous operation of this key stage in a supply and sanitation network.

All of this, condensed in a 100% online Postgraduate Certificate that allows students the ease of being able to study wherever and whenever they want. You will only need a device with internet access to boost your career to the top. A modality suitable for today's world with all the guarantees that studying at a great university offers.

This **Postgraduate Certificate in Urban Water Pumping Stations** contains the most complete and up-to-date program on 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 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



*With this program, you will acquire skills that will allow you to move up in your daily work and improve your working conditions"*

“

*Environmental protection is one of the main challenges facing the water sector. With the knowledge you will acquire in this Postgraduate Certificate, you will propel your career towards change”*

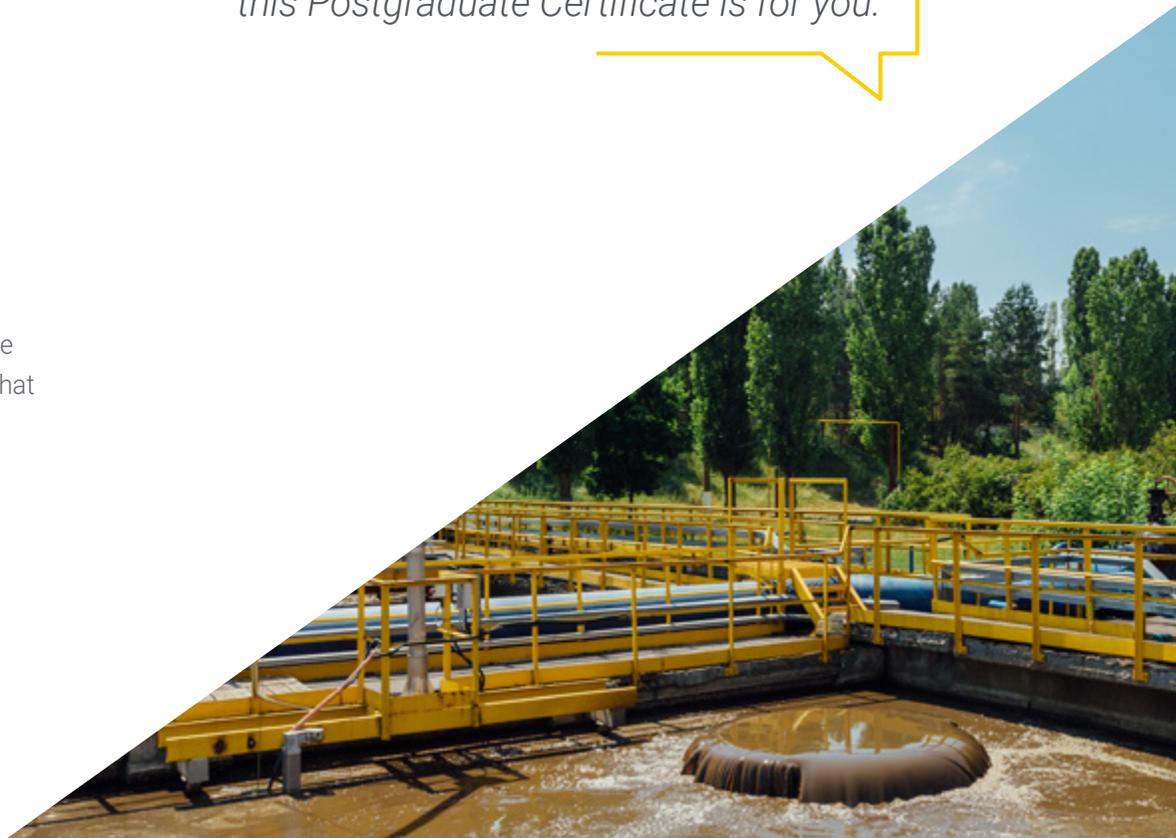
*Academic programs like this are what 21st century engineers need.*

*If you want to start working in the urban water pumping sector, boasting unique competencies and skills, then this Postgraduate Certificate is for you.*

The program's teaching staff includes professionals from the sector who contribute their work experience to this training 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.



# 02

# Objectives

One of the main objectives of this Postgraduate Certificate is to help students develop a series of core competencies that will enable them to successfully operate and manage urban water pumping stations. The knowledge poured in the development of the points of the study plan will drive the professional from a global perspective, with full qualification for the achievement of the proposed objectives. You will be fully empowered in a field of engineering that is versatile, global and essential, leading you to excellence in an industry that continues to grow and needs more professionals with expertise in the field.





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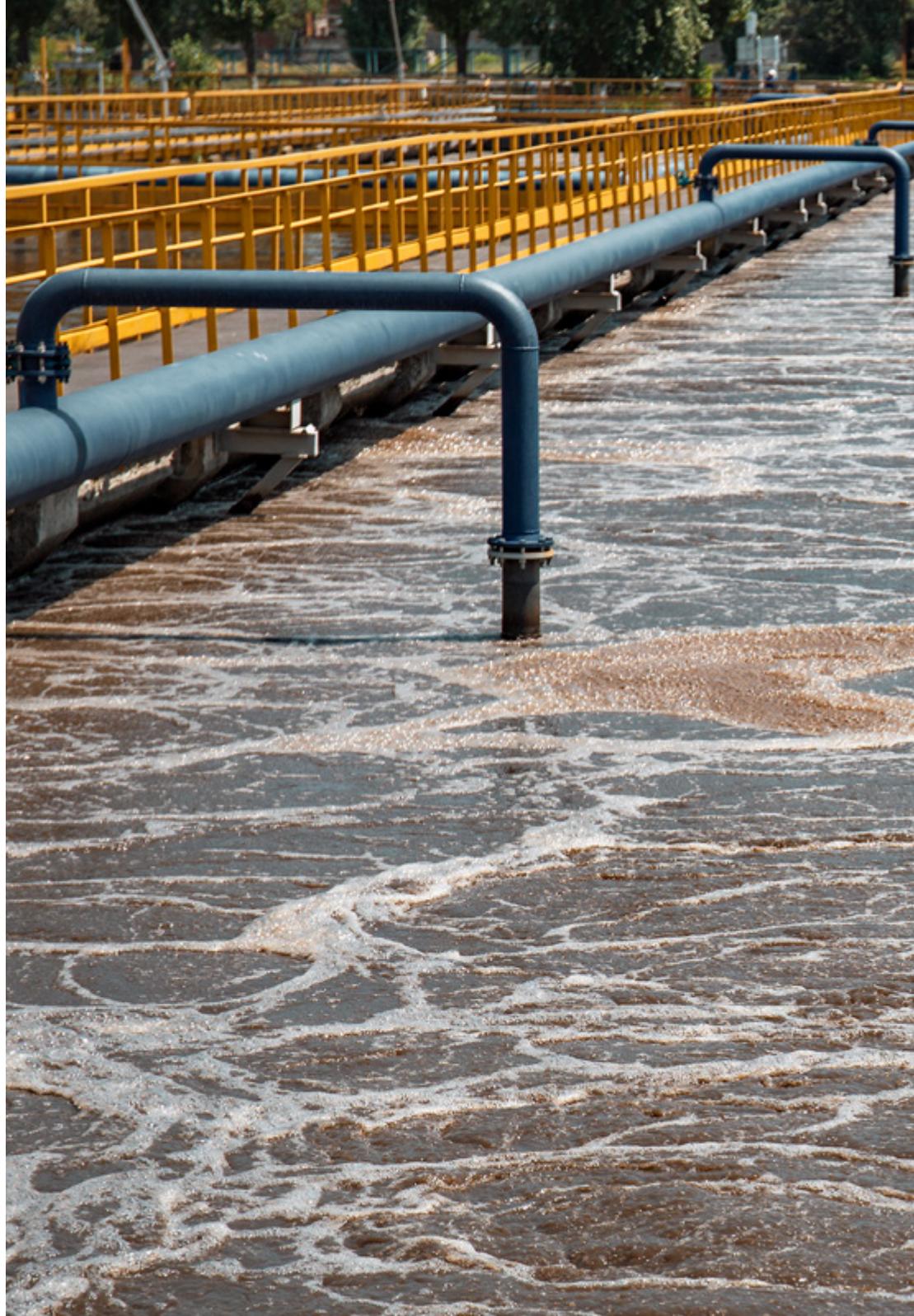
*The main objective of this university  
is to specialize the best experts.  
Become one of them too"*



## 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





## Specific Objectives

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- ◆ Complete Sizing of a Water Pumping Station
- ◆ Select the electromechanical equipment best suited to the needs of a water lifting system.
- ◆ Analyze the latest hydrodynamic simulation tools that facilitate the successful design of a pumping system prior to its commissioning
- ◆ Be able to apply the latest technological innovations to establish a state-of-the-art management of pumping stations.

“

*Didactic so that you can learn on the basis of the best theoretical support”*

# 03

# Course Management

In its maxim of offering an elite education for all, TECH relies on renowned professionals so that the student acquires a solid knowledge in the specialty of Public Water Service. For this reason, this Postgraduate Certificate has a highly qualified team with extensive experience in the sector, which will offer the best possible resources for students in the development of their skills during the course. In this way, students have the guarantees they need to specialize at an international level in a booming sector that will catapult them to professional success.



“

*Learn through the knowledge of the best professionals in the sector and become a prestigious engineer yourself”*

## 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 Jaume 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. Simarro Ruiz, Mario

- ◆ Key Account Manager for Spain & Portugal and Technical Sales Representative in EMEA & LATAM in DuPont Water Solutions company
- ◆ He has been working for almost 15 years in the Municipal water segment, mainly water treatment and reuse, promoting technologies and developing markets
- ◆ Industrial Engineer, Polytechnical University of Madrid
- ◆ Executive MBA from EAE Business School
- ◆ He has participated as speaker in congresses of the Spanish Association of Desalination and Reuse as well as with other entities

# 04

## Structure and Content

The following TECH Postgraduate Certificate contains a high-level syllabus that has been designed according to the requirements proposed by the teaching team. Thus, a study plan has been established consisting of different subjects that offer a broad perspective on everything related to urban water pumping systems from a global point of view for the sake of their application at an international level, incorporating all the fields of work involved in the development of their functions, both public and private.





“

*Content of this quality is not found  
in just any academic program"*

## Module 1. Pumping Stations

- 1.1. Applications
  - 1.1.1. Supply
  - 1.1.2. Purification and WWTP
  - 1.1.3. Singular Applications
- 1.2. Hydraulic Pumps
  - 1.2.1. Evolution of Hydraulic Pumps
  - 1.2.2. Types of Impellers
  - 1.2.3. Advantages and Disadvantages of Different Types of Pumps
- 1.3. Engineering and Design of Pumping Stations
  - 1.3.1. Submersible Pumping Stations
  - 1.3.2. Dry Chamber Pumping Stations
  - 1.3.3. Economic Analysis
- 1.4. Installation and Operation
  - 1.4.1. Economic Analysis
  - 1.4.2. Real Case Designs
  - 1.4.3. Pump Testing
- 1.5. Monitoring and Control of Pumping Stations
  - 1.5.1. Pump Start-Up Systems
  - 1.5.2. Pump Protection Systems
  - 1.5.3. Optimization of Pump Control Systems
- 1.6. Enemies of Hydraulic Systems
  - 1.6.1. Water Hammer
  - 1.6.2. Cavitation
  - 1.6.3. Noise and Vibration





- 1.7. Total Life Cycle Cost of a Pumping Unit
  - 1.7.1. Costs
  - 1.7.2. Cost Distribution Model
  - 1.7.3. Identification of Opportunity Areas
- 1.8. Hydrodynamic Solutions. CFD Modeling
  - 1.8.1. Importance of CFD
  - 1.8.2. CFD Analysis Process in Pumping Stations
  - 1.8.3. Interpretation of Results
- 1.9. Latest Innovations Applied to Pumping Stations
  - 1.9.1. Innovation in Materials
  - 1.9.2. Intelligent Systems
  - 1.9.3. Digitization of the Industry
- 1.10. Unique Designs
  - 1.10.1. Singular Design in Sourcing
  - 1.10.2. Singular Design in Sanitation
  - 1.10.3. Pumping Station in Sitges

“*Study comfortably and without the need for uncomfortable commuting by opting for this Postgraduate Certificate*”

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.





“

*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.*



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

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.

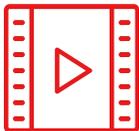
This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this 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.





### 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.



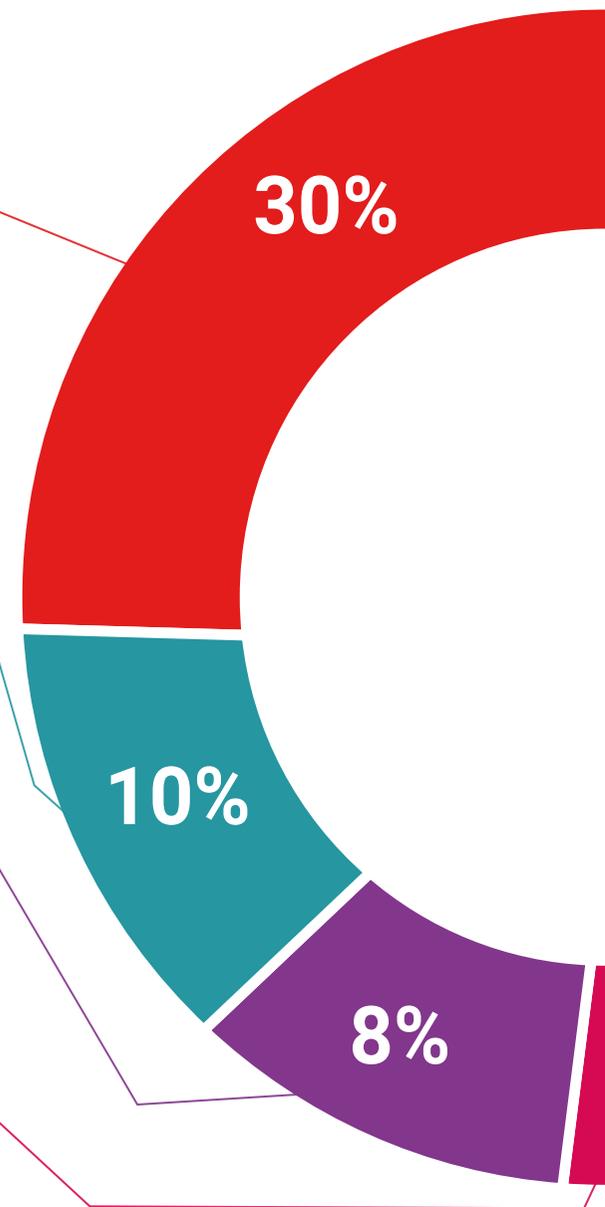
### Practising Skills and Abilities

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

Through a different and stimulating learning experience, you will be able to acquire the necessary skills to take a big step in your training. An opportunity to progress, with the support and monitoring of a modern and specialized university, which will propel you to another professional level.



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

This **Postgraduate Certificate in Urban Water Pumping Stations** 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 Urban Water Pumping Stations**

Official N° of Hours: **150 h.**



\*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.

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



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