

# Postgraduate Certificate Design and Operation of Urban Drinking Water Treatment Plants





## Postgraduate Certificate Design and Operation of Urban Drinking Water Treatment Plants

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

Website: [www.techtute.com/in/engineering/postgraduate-certificate/design-operation-urban-drinking-water-treatment-plants](http://www.techtute.com/in/engineering/postgraduate-certificate/design-operation-urban-drinking-water-treatment-plants)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

---

*p. 20*

06

Certificate

---

*p. 28*

# 01

# Introduction

This complete and up to date program is different from others in the sector because it provides the engineer with key knowledge that the professional must know when working in the area of water treatment. First, from the design phase, where the pollutants present in the water and the modeling of the parameters with the greatest influence on its subsequent treatment must be considered. And secondly, in the field of operation, in which the day to day problems in the management of a drinking water treatment plant are developed with a practical approach, from the main processes of disinfection and turbidity reduction to the treatment of salts and new pollutants.



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*Learn to work in the design and operation of urban treatment plants and become an expert engineer in the field by taking this academic program"*

This Postgraduate Certificate was created with the objective of responding to the increasingly demanding needs of guaranteeing adequate water purification in treatment plants. The scarcity of the resource and anthropogenic factors force the urban water service engineering professional to have a broad knowledge of the appropriate treatments for each type of pollutant.

The Postgraduate Certificate in Design and Operation of Urban Drinking Water Treatment Plants develops the key knowledge in which a professional in this field should delve into. First, from the design phase, where the pollutants present in the water and the modeling of the parameters with the greatest influence on its subsequent treatment must be considered. And secondly, in the field of operation, in which the day-to-day problems in the management of a drinking water treatment plant are developed with a practical approach, from the main processes of disinfection and turbidity reduction to the treatment of salts and new pollutants.

In this sense, this Postgraduate Certificate stands out for providing the necessary tools for the complete operation of a drinking water treatment plant, such as the creation of an analytical plan and its subsequent follow up. It also develops the most relevant economic aspects of the operation: variable costs of chemical products and electrical energy, and fixed costs of personnel and equipment, providing the keys for their optimization.

At the end of the Postgraduate Certificate, the student will be able to:

- ◆ Size the treatment stages of a water treatment plant
- ◆ Implement a quality control plan to quickly identify deviations from service standards
- ◆ Create a record of operations to enable continuous improvement and optimization of the service
- ◆ Know the economic aspects that will allow the student to make the best technical decisions based on the above management tools

The **Postgraduate Certificate in Design and Operation of Urban Drinking Water Treatment Plants** contains the most complete and up-to-date educational program on the market. The most important features include:

- ◆ The development of case studies presented by experts in Engineering focused on the Integrated 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 Postgraduate Certificate you will be able to work as an expert in water treatment plants and revalue your curriculum"*

“

*What you study is very important, but knowing how to put it into practice is fundamental. That's why at TECH, we provide you with practical exercises that you might have to face in the daily practice of your profession"*

*The skills you will acquire will position you at the forefront of the sector.*

*Make the most of this great opportunity and take the step to enroll in this Postgraduate Certificate. It's the most complete on the market.*

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

With the objective of providing the engineer with transversal competencies that will allow him to operate in the drinking water treatment plants sector with success, this Postgraduate Certificate will provide the professional with a compendium of didactic material in a theoretical and practical format specially designed to help the student to internalize the knowledge in the most effective way. To this end, TECH establishes a series of general and specific objectives for the greater satisfaction of the future graduate, those being the following.







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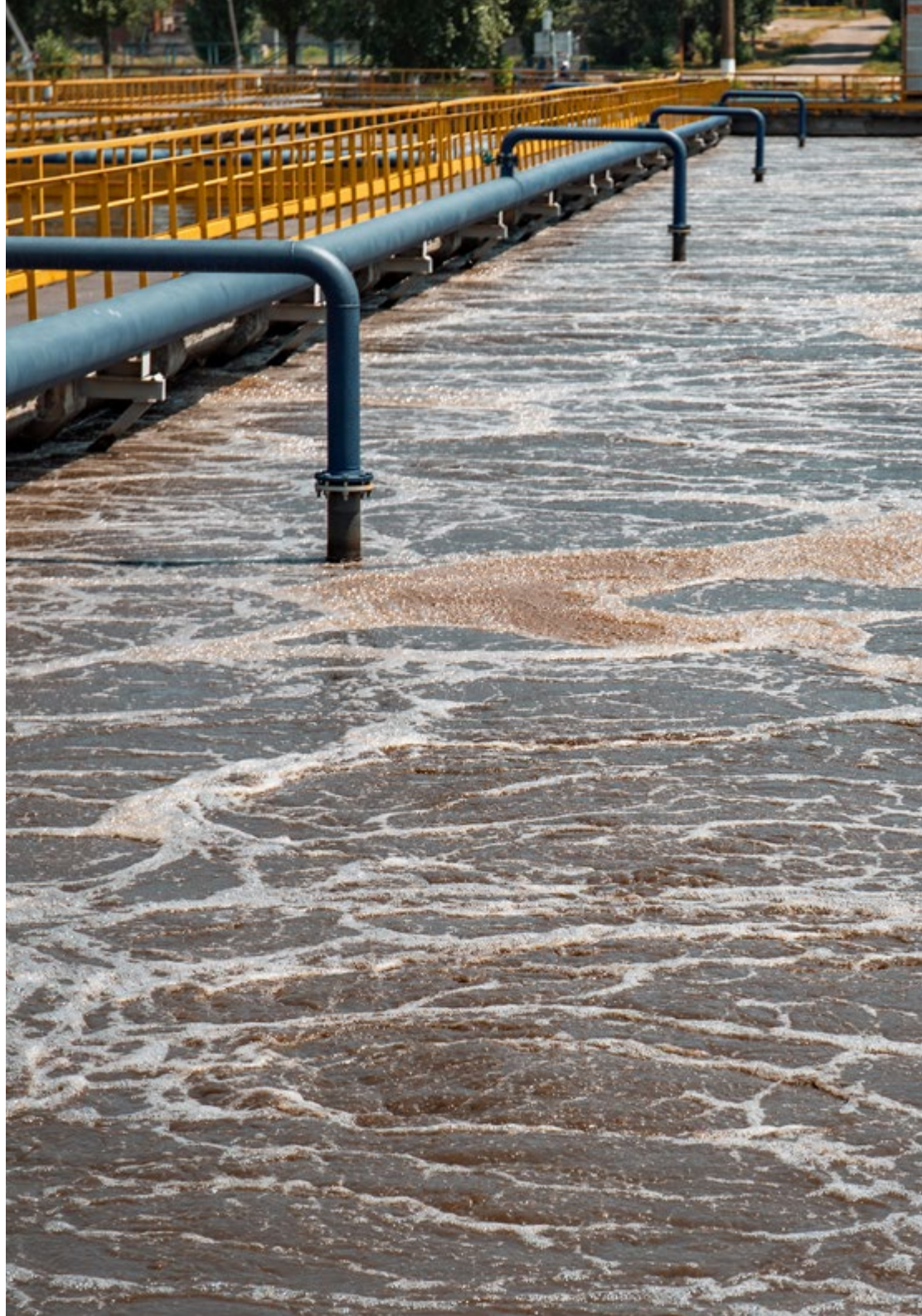
*Achieve your professional goals and objectives by studying at TECH. This is the opportunity you were waiting for”*



## 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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- ◆ Provide an overview of the importance of drinking water treatment in a drinking water treatment plant
- ◆ Delve into the treatments involved in the drinking water treatment processes in order to effectively detect the source of the problem in the event of non-compliant water analysis at the plant outlet
- ◆ Minimize the cost of water production by optimizing the resources available in a water treatment plant



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

# 03

# Course Management

With the objective of offering an elite education for everyone, TECH counts on renowned professionals so that the student acquires a solid knowledge in the specialty of design and operation of drinking water treatment plants. 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 specialise at an international level in a booming sector that will catapult them to professional success.





“

*Succeed with the best and acquire the knowledge and skills you need to embark on the drinking water treatment industry”*

## 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. Llopis Yuste, Edgar

- ◆ Expert in the construction of hydraulic infrastructures, industrial process water treatment and drinking water treatment equipment
- ◆ Municipal drinking water supply manager
- ◆ Technical Engineer in Public Works from the Polytechnic University of Valencia
- ◆ Degree in Environmental Sciences from the UPV
- ◆ Master's Degree MBA by UPV
- ◆ Master's Degree in Industrial Wastewater Treatment and Recycling Engineering, Catholic University of Valencia

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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 structure and contents of this Postgraduate Certificate have been designed by a team of highly prestigious and experienced professionals who have been working in this sector for many years. This team, aware of the current market reality, has created a series of didactic materials in a theoretical and practical format especially designed to teach the engineer in a simple, effective and efficient way.







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*We offer you a premium content plan to take your knowledge to the next level”*

**Module 1. Urban Drinking Water Treatment Plants. Design and operation**

- 1.1. Importance of Water Quality
  - 1.1.1. Global Water Quality
  - 1.1.2. Population Health
  - 1.1.3. Water-Borne Diseases
  - 1.1.4. Risks in the Short and Medium to Long Term
- 1.2. Water Quality Criteria. Parameters
  - 1.2.1. Microbiological Parameters
  - 1.2.2. Physical Parameters
  - 1.2.3. Chemical Parameters
- 1.3. Water Quality Modeling
  - 1.3.1. Time Spent in the Network
  - 1.3.2. Reaction Kinetics
  - 1.3.3. Water Origin
- 1.4. Water Disinfection
  - 1.4.1. Chemical Products Used in Disinfection
  - 1.4.2. Behavior of Chlorine in Water
  - 1.4.3. Chlorine Dosing Systems
  - 1.4.4. Chlorine Measurement in the Network
- 1.5. Turbidity Treatments
  - 1.5.1. Possible Causes of Turbidity
  - 1.5.2. Problems of Turbidity in Water
  - 1.5.3. Turbidity Measurement
  - 1.5.4. Limits of Turbidity in Water
  - 1.5.5. Treatment Systems
- 1.6. Treatment of Other Pollutants
  - 1.6.1. Physicochemicals
  - 1.6.2. Ion Exchange Resins
  - 1.6.3. Membrane Treatments
  - 1.6.4. Activated Carbon





- 1.7. Tank and Pipeline Cleaning
  - 1.7.1. Emptying of Water
  - 1.7.2. Solids Removal
  - 1.7.3. Disinfection of Walls
  - 1.7.4. Rinsing of Walls
  - 1.7.5. Filling and Service Restitution
- 1.8. Quality Control Plan
  - 1.8.1. Objectives of the Control Plan
  - 1.8.2. Sampling Points
  - 1.8.3. Types of Analysis and Frequency
  - 1.8.4. Analysis Laboratory
- 1.9. Operational Record
  - 1.9.1. Chlorine Concentration
  - 1.9.2. Organoleptic Examination
  - 1.9.3. Other Specific Contaminants
  - 1.9.4. Laboratory Analysis
- 1.10. Economic Considerations
  - 1.10.1. Personal
  - 1.10.2. Cost of Chemical Reagents
  - 1.10.3. Dosing Equipment
  - 1.10.4. Other Treatment Equipment
  - 1.10.5. Cost of Water Analysis
  - 1.10.6. Cost of Metering Equipment
  - 1.10.7. Energy

“*Study and specialize with the confidence that comes with being a graduate of an internationally prestigious university*”

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 Design and Operation of Urban Drinking Water Treatment Plants guarantees students, 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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*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*

This **Postgraduate Certificate in Design and Operation of Urban Drinking Water Treatment Plants** 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 Design and Operation of Urban Drinking Water Treatment Plants**

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  
online training  
development language  
classroom



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