

# Postgraduate Certificate Wastewater Treatment





## Postgraduate Certificate Wastewater Treatment

- » 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/postgraduate-certificate-wastewater-treatment](http://www.techtute.com/us/engineering/postgraduate-certificate/postgraduate-certificate-wastewater-treatment)

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# 01

# Introduction

Wastewater treatment is key in the field of water engineering, since once water is used it is essential to treat it in order to reduce the environmental impact derived from its use. Get qualified with this comprehensive course and acquire the necessary skills to develop your profession in this field, following the highest quality standards.







“

*A comprehensive and multidisciplinary program that will allow you to excel in your career, following the latest advances in Wastewater Treatment”*

The purpose of a wastewater treatment plant (WWTP) is to remove pollutants from wastewater in order to return the water to its source without the presence of pollutants. Among the most frequent contaminants are oils, greases, sands, settleable solids, ammonia and phosphorus compounds.

After passing through the WWTP and as in any chemical process, a product is obtained which is the decontaminated water and a by-product which is the stable sludge as a result of the operations carried out.

The course is focused on the study of the processes and equipment associated with a wastewater treatment plant from a chemical engineering point of view. First, a description of the chemical contaminants is given and the methodology for sample collection is discussed. Secondly, the processes carried out in a WWTP are studied in depth, differentiating between pretreatment, primary, secondary and tertiary treatment. Thirdly, the sludge obtained in a WWTP, its treatment and its use in the form of biogas are studied. Finally, low-cost purification technologies, such as lagooning or green filtering, among others, will be studied.

After completing this training, the student will be able to identify and understand the physicochemical processes of a wastewater treatment plant, as well as to design the equipment of a WWTP.

It should be noted that as this is a 100% online course, the student is not conditioned by fixed schedules or the need to move to another physical location, but can access the contents at any time of the day, balancing their work or personal life with their academic life.

This **Postgraduate Certificate in Wastewater Treatment** contains the most complete and up to date educational program on the market. The most important features of the program include:

- » The development of case studies presented by Wastewater Treatment experts.
- » The graphic, schematic, and eminently 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
- » Special focus on innovative methodologies in Wastewater Treatment
- » Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- » Access to content from any fixed or portable device with an Internet connection.



*Don't miss the opportunity to take this Wastewater Treatment Course with us. It's the perfect opportunity to advance your career"*

“ *This course is the best investment you can make in selecting a refresher program to bring your Wastewater Treatment knowledge up to date.* ”

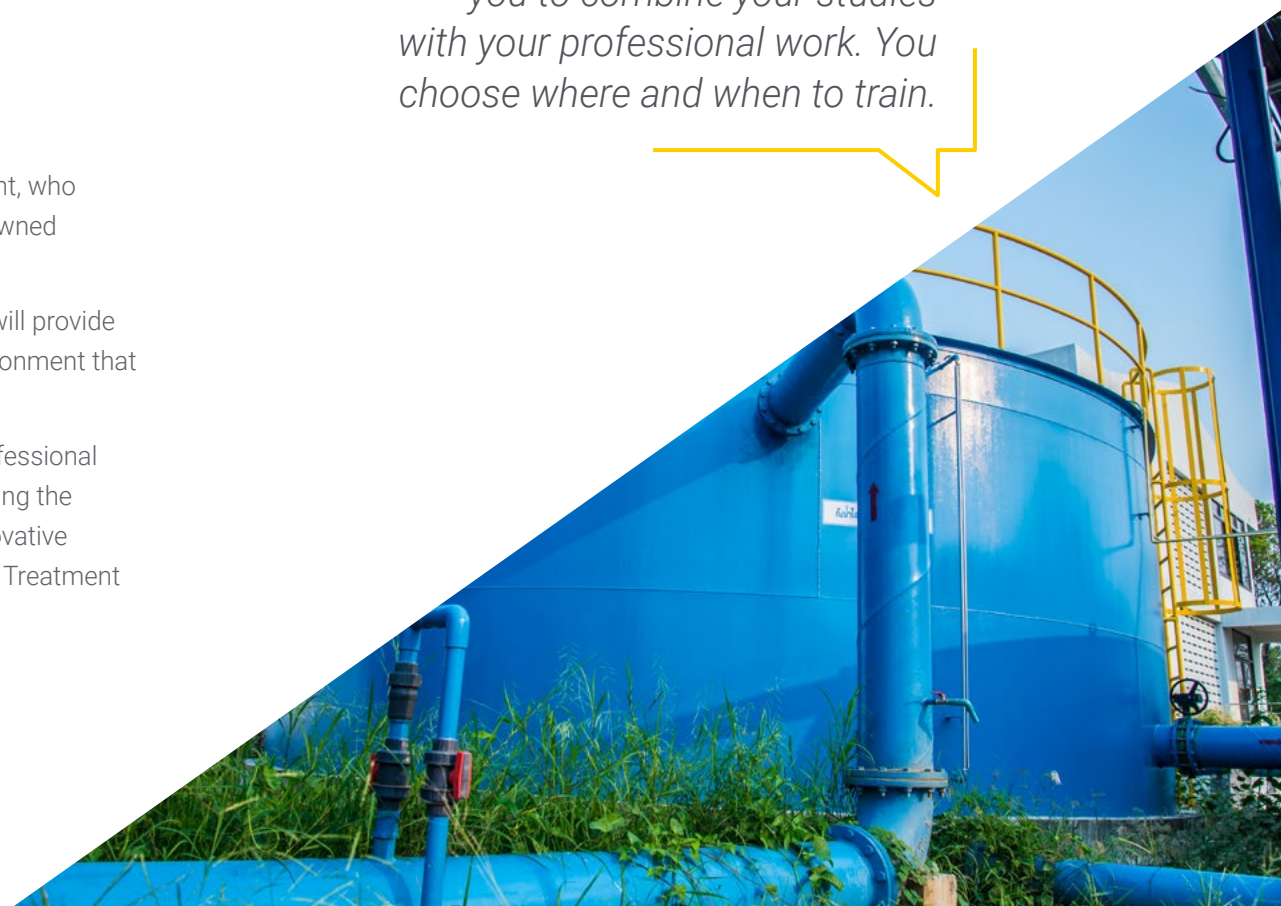
*This training is provided with the best didactic material, which will allow for a contextual study that will facilitate your learning.*

*This 100% online course will allow you to combine your studies with your professional work. You choose where and when to train.*

Its teaching staff includes professionals from the field of waste management, who contribute their work experience to this training program, in addition to renowned specialists from leading companies 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 training programmed to train 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 Wastewater Treatment experts.





# 02 Objectives

The **Wastewater Treatment Course** is oriented towards facilitating the professional's performance in order to acquire and know the main advances in this field.







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*Our goal is to make you the best professional in your sector. And for this we have the best methodology and content”*



## General Objectives

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- » Address the relationship between water and the environment
- » Describe the physicochemical processes involved in a Wastewater Treatment plant, which will allow the student to design equipment for a wastewater treatment plant.







## Specific Objectives

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- » Know the process steps of a wastewater treatment plant.
- » Design equipment such as tanks, piping, pumps, compressors and heat exchangers, as well as specific WWTP equipment dedicated to sedimentation or flotation.
- » Study biological processes and associated technologies such as biofilters, aerobic digesters or activated sludge digesters.
- » Understand the technologies for nitrogen and phosphorus removal.
- » Study low-cost purification technologies such as lagooning and green filtering.

“

*Take the step to get up to date on the latest developments in Wastewater Treatment”*



03

# Course Management

In our university we have professionals specialized in each area of knowledge, who bring their work experience into our training programs.



“

*Our university employs the best professionals in all areas who share their knowledge to help you"*

## Management



### Mr. Nieto Sandoval González, Nicolás David

- ♦ Industrial Technical Engineer by the E.U.P. of Málaga.
- ♦ Industrial Engineer from E.T.S.I.I.
- ♦ Master's Degree in Integral Management of Quality, Environment and Health and Safety at Work by the University of the Balearic Islands
- ♦ Working for more than 11 years as a consultant in engineering, project management, energy saving and circularity in organizations, he has been working both for companies and on his own account for clients in the private agri-food industry and the institutional sector for more than 11 years.
- ♦ Professor certified by the EOI in the areas of Industry, Entrepreneurship, Human Resources, Energy, New Technologies, and Technological Innovation.
- ♦ Trainer of the European INDUCE project
- ♦ Trainer in institutions such as COGITI and COIIM.

## Professors

### Mr. Mullor Real, Cristina

- » Graduate in Environmental Sciences from the Miguel Hernández University of Elche.
- » Master's Degree in Environmental Engineering, specializing in industrial environmental management and management of water treatment plants from the University of Valencia.
- » With experience as an environmental consultant in various industrial sectors
- » Safety Advisor for the Transport of Dangerous Goods by Road







04

# Structure and Content

The structure of the contents has been designed by the best professionals in the Wastewater Treatment sector, with extensive experience and recognized prestige in the profession.





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*We have the most complete and up-to-date academic program in the market. We strive for excellence and for you to achieve it too”*



## Module 1. Wastewater Treatment

- 1.1. Water Pollution Assessment
  - 1.1.1. Water Transparency
  - 1.1.2. Water Pollution
  - 1.1.3. Effects of Water Pollution
  - 1.1.4. Contamination Parameters
- 1.2. Sample Collection
  - 1.2.1. Collection Procedure and Conditions
  - 1.2.2. Sample Size
  - 1.2.3. Sampling Frequency
  - 1.2.4. Sampling Program
- 1.3. WWTP: Pretreatment
  - 1.3.1. Receipt of Water
  - 1.3.2. Dimensioning
  - 1.3.3. Physical Processes
- 1.4. WWTP: Primary Treatment
  - 1.4.1. Sedimentation
  - 1.4.2. Flocculation-Coagulation
  - 1.4.3. Types of Decanters
  - 1.4.4. Decanter Design
- 1.5. WWTP: Secondary Treatment (I)
  - 1.5.1. Biological Processes
  - 1.5.2. Factors Affecting the Biological Process
  - 1.5.3. Active Sludge
  - 1.5.4. Percolating Sludge
  - 1.5.5. Rotary Biological Contact Reactor
- 1.6. WWTP: Secondary Treatment (II)
  - 1.6.1. Biofilters
  - 1.6.2. Digesters
  - 1.6.3. Agitation Systems
  - 1.6.4. Aerobic Digesters: Perfect Mixing and Piston Flow
  - 1.6.5. Active Sludge Digester
  - 1.6.6. Secondary Decanter
  - 1.6.7. Active Sludge Systems
- 1.7. Tertiary Treatment (I)
  - 1.7.1. Nitrogen Removal
  - 1.7.2. Phosphorus Removal
  - 1.7.3. Membrane Technology
  - 1.7.4. Oxidation Technologies Applied to Waste Generated
  - 1.7.5. Disinfection
- 1.8. Tertiary Treatment (II)
  - 1.8.1. Adsorption with Activated Carbon
  - 1.8.2. Steam or Air Entrainment
  - 1.8.3. Gas Washing: Stripping
  - 1.8.4. Ion Exchange
  - 1.8.5. pH Regulation
- 1.9. Sludge Study
  - 1.9.1. Sludge Treatment
  - 1.9.2. Flotation
  - 1.9.3. Assisted Flotation
  - 1.9.4. Dosing and Mixing Tank for Coagulants and Flocculants
  - 1.9.5. Sludge Stabilization
  - 1.9.6. High-load Digester
  - 1.9.7. Low-load Digester
  - 1.9.8. Biogas
- 1.10. Low Cost Purification Technologies
  - 1.10.1. Septic Tanks
  - 1.10.2. Digester-decanter Tank
  - 1.10.3. Aerobic Lagooning
  - 1.10.4. Anaerobic Lagooning
  - 1.10.5. Green Filter
  - 1.10.6. Sand Filter
  - 1.10.7. Peat Bed



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*This training will allow you to advance in your career comfortably.”*

05

# Methodology

This training provides you with a different way of learning. Our methodology is developed through a cyclical learning mode: **Relearning**.

This teaching system is used in the most prestigious medical schools in the world and has been considered one of the most effective by major publications such as the **New England Journal of Medicine**.







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*Discover Re-learning, 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"*

## At TECH we use the Case Method

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

“

*With TECH you can experience a way of learning that is shaking the foundations of traditional universities around the world”*



*We are the first online university to combine Harvard Business School case studies with a 100% online learning system based on repetition.*



### **A learning method that is different and innovative.**

This Waste and Wastewater course at TECH Technological University is an intensive program that prepares you to face all the challenges in this area, both nationally and internationally. We are committed to promoting your personal and professional growth, the best way to strive for success, that is why at TECH Technological University you will use Harvard case studies, with which we have a strategic agreement that allows us to offer you material from the best university in the world.

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

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

The case method has been the most widely used learning system among the world's leading business schools for as long as they have existed. 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.

In a given situation, what would you do? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, you will be presented with multiple real cases. You will have to combine all your knowledge, and research, argue, and defend your ideas and decisions.



## Re-learning Methodology

Our University is the first in the world to combine Harvard University case studies with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance Harvard case studies with the best 100% online teaching method: Re-learning.

*In 2019 we obtained the best learning results of all Spanish-language online universities in the world.*

At TECH you will learn with an innovative methodology designed to train the managers of the future. This method, at the forefront of international teaching, is called Re-learning.

Our University is the only one in Spanish-speaking countries licensed to incorporate 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 Spanish online university indicators.



In our program, learning is not a linear process, but rather a spiral (we learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

With this methodology we have 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, markets, and financial 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.

*Re-learning 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 to success.*

Based on the latest evidence in neuroscience, not only do we know how to organize information, ideas, images, memories, but we also know that the place and context where we have learned something is crucial for us to be able to remember it and store it in the hippocampus, and 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.



In this program you will have access to the best educational material, prepared with you 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 really specific and precise.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



### Classes

There is scientific evidence on the usefulness of third-party expert observation.

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



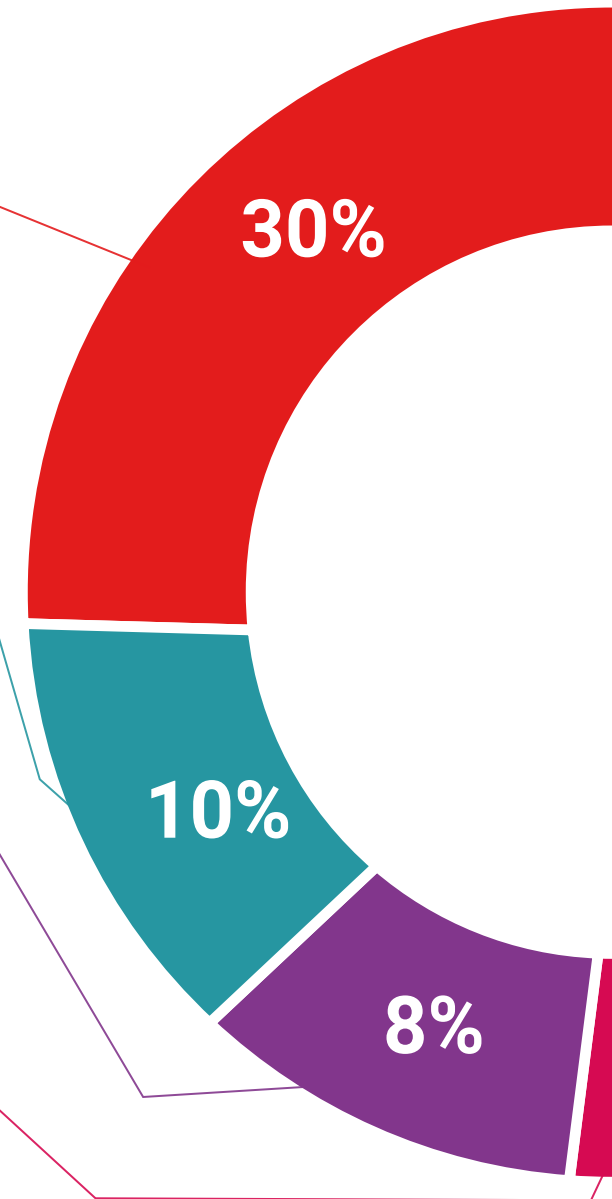
### Practising Skills and Abilities

You 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 we live in.



### Additional Reading

Recent articles, consensus documents, international guides. in our virtual library you will have access to everything you need to complete your training.







### Case Studies

You will complete a selection of the best case studies in the field used at Harvard. Cases that are presented, analyzed, and supervised by the best senior management specialists in Latin America.



### Interactive Summaries

We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".



### Testing & Re-Testing

We periodically evaluate and re-evaluate your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.



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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*Include in your training a Wastewater Treatment Course: a high added Value qualification for any professional in this area"*



This **Postgraduate Certificate in Wastewater Treatment** contains the most complete and up to date scientific program on the market.

Once the student has passed the evaluations, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University**

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

Title: **Postgraduate Certificate in Wastewater Treatment**

ECTS: **6**

Official Number of Hours: **150**



\*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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- » Certificate: **TECH Technological University**
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- » Schedule: at your own pace
- » Exams: online



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