

# Postgraduate Diploma Waste and Wastewater



## Postgraduate Diploma Waste and Wastewater

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 24 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/engineering/postgraduate-diploma/postgraduate-diploma-waste-wastewater](http://www.techtute.com/us/engineering/postgraduate-diploma/postgraduate-diploma-waste-wastewater)

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# 01

# Introduction

The importance of proper waste management is fundamental both in the private sector and in organizations, since poor waste management can lead to serious problems, mainly environmental. Take this comprehensive training course and acquire the necessary skills to develop your profession with total rigor.





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*A comprehensive and multidisciplinary training course that will allow you to excel in your career, following the latest advances in waste management”*

The generation of waste resulting from human activities is still awaiting a solution so as not to compromise the capacity of future generations. This is why there is a European waste policy. Inadequate waste management produces significant impacts on the recipient environments, generating adverse effects on water, soil and air, contributing to climate change, affecting ecosystems and human health.

It is also necessary to bear in mind that, since its inception, industrial activity has been linked to the production of waste. This has become one of the major environmental problems of our society. So much so, that in recent years the appearance and development of technologies has caused the volume of industrial waste production to increase by 1200%. This is causing problems at both economic and environmental levels, leading to irreversible natural catastrophes for our planet.

In the same way, wastewater treatment is key in the field of water engineering, because once water is used, it is necessary to treat it in order to reduce the environmental impact derived from its use. 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. These waters can be domestic or industrial. Contaminants include oils, greases, sands, settleable solids, ammonia and phosphorus compounds.

With the increase and development of legislation derived from environmental directives, there has been a growing social sensitivity, as well as civil and criminal liability of companies for damage caused to the environment. The problems of air and sea pollution and the large amount of waste of all kinds have forced companies and administrations, along with the environmental authorities, to develop and incorporate effective tools and measures for environmental management.

This **Waste and Wastewater Postgraduate Diploma** contains the most complete and up to date educational program on the market. The most important features of the specialization are:

- » The development of case studies presented by Waste and Wastewater Postgraduate Diplomas.
- » The graphic, schematic and eminently practical contents with which they have been conceived, gather a scientific and practical in specialization on those disciplines that are indispensable for professional practice.
- » Practical exercises where the self-assessment process can be carried out to improve learning.
- » Special emphasis on innovative methodologies in Waste and Wastewater.
- » Theoretical lessons, questions to the Postgraduate Diploma, debate forums on controversial topics, and individual reflection assignments.
- » Content that is accessible from any fixed or portable device with an Internet connection.



*Do not miss the opportunity to take with us this Postgraduate Diploma in Resources and Wastewater. It's the perfect opportunity to advance your career"*

“

*This Postgraduate Diploma is the best investment you can make in selecting a refresher program to update your knowledge in Waste and Wastewater"*

Its teaching staff includes professionals from the field of waste management, who bring the experience of their work to this specialization, in addition to recognized specialists from leading companies and prestigious universities.

Its Multimedia Content, elaborated with the latest Educational Technology, will allow the Professional a situated and contextual learning, that is to say, a Simulated Environment that will provide an immersive specialization 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 developed by renowned and experienced waste and wastewater experts.

*This specialisation comes with the best didactic material, providing you with a contextual approach that will facilitate your learning.*

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



02

# Objectives

The Postgraduate Diploma in Waste and Wastewater is oriented to facilitate the professional's performance in order to acquire and know the main novelties 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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- » Provide the student with the knowledge to identify waste, classify it and understand its flow.
- » Knowing the characteristics of waste and the problems in its management and final treatment.
- » Identify the origin of urban or municipal waste and the evolution of its production.
- » Have key knowledge on the potential health and environmental effects of municipal waste and landfill issues.
- » Know the main digital technologies available in municipal solid waste management.
- » Develop the optimal management of industrial waste, mainly through minimization at source and recycling of by-products.
- » Know the most relevant aspects of industrial waste and the environmental legislation applicable to the management of industrial waste together with the procedure for the correct management of industrial waste and your obligations as a producer.
- » Master the latest industrial waste treatment and disposal techniques and optimize industrial waste management through the use of waste minimization techniques.



## Specific Objectives

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- » Know how to identify waste.
- » Identify and differentiate the different types of existing waste.
- » Understand from a practical point of view the different management options whose range opens up for different waste streams.
- » Be able to propose different treatment schemes according to the characteristics of the waste.
- » Deepen understanding of the existing problems related to the production of waste.
- » Analyze the evolution of waste production by origin and type of waste.
- » Know how to analyze and assess the health and environmental impact of waste management.
- » Propose measures to reduce, recycle and reuse the waste generated.
- » Propose landfill management and restoration models.
- » Deepen understanding of the latest digital technologies available in municipal solid waste management.
- » Knowledge of how to propose internal waste management models.
- » Have knowledge of waste management plan elaboration and evaluation.
- » Have the capacity to reduce industrial waste through the use of by-product bags.
- » Identify and understand the market for waste as secondary raw materials, understanding its market.
- » Know the process stages 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.

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*Take the step to get up to date  
on the latest news in Waste and  
Wastewater”*



03

# Course Management

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





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

## International Guest Director

Considered as a true reference in the field of Waste Management for his sustainable initiatives, Frederick Jeske - Schoenhoven is a prestigious Environmental Engineer. In this sense, his philosophy has focused on the optimization of recycling processes, minimization of waste generation and promotion of environmentally friendly practices.

In this way, he has developed his professional work in recognized organizations such as the Treasury Department or the French Ministry of Economy, Finance and Industry, as well as the American World Bank. There, he has been in charge of multiple functions ranging from active portfolio management to the digital transformation of institutions. This has enabled companies to handle innovative technological tools such as Artificial Intelligence, Big Data and even the Internet of Things. As such, institutions have managed to set up advanced automation solutions to optimize their strategic processes considerably. In addition, it has created multiple online platforms that have facilitated the exchange and reuse of materials, thereby fostering a circular economy model.

On the other hand, he has balanced this facet with his work as a researcher. In this regard, he has published numerous articles in specialized journals on topics such as new recycling technologies, the most innovative techniques to improve the efficiency of waste management systems or cutting-edge strategies to ensure a sustainable approach in the industrial production chain. As a result, he has contributed to an increase in recycling rates in several communities.

In addition, he is a strong advocate for education and awareness of the treatment of waste from manufacturing activities. As such, he has spoken at numerous conferences globally to share his solid understanding of this field.



## Mr. Jeske-Schoenhoven, Frederick

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- Director of Strategy and Sustainability at SUEZ in Paris, France
- Strategy and Marketing Director of Dormakaba in Zurich, Switzerland.
- Vice President of Strategy and Business Development at Siemens in Berlin, Germany
- Director of Communications, Siemens Healthineers, Germany
- Executive Director of the World Bank in Washington, United States
- Head of Management at the General Directorate of the Treasury, Government of France
- Advisory Counselor at the International Monetary Fund in Washington, United States
- Financial Consultant at the French Ministry of Economy, Finance and Industry of France
- Master's Degree in Administration and State Policy, École Nationale d'Administration, France
- Master's Degree in Management Sciences, HEC Paris
- Master's Degree in Political Science from Sciences Po
- Degree in Environmental Engineering from IEP Paris

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

## Management



### Mr. Nieto-Sandoval González Nicolás, David

- Industrial Technical Engineer by the E.U.P. of Malaga.
- Industrial Engineer by the 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, both for companies and on his own account, for clients in the private Agri-food Industry and the institutional sector, as a Consultant in Engineering, Project Manager, Energy Saving and Circularity in Organizations.
- Professor recognized 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. Álvarez Cabello, Begoña

- » Degree in Biology from the University of Córdoba.
  - » Master's Degree in Environmental Quality and Sustainability in Local and Territorial Development from the University of Castilla-La Mancha.
  - » Technician in Occupational Risk Prevention by the Fundación de la Construcción.
  - » Specialist in Geographic Inespecialization Systems (GIS).
  - » Extensive experience as an environmental and occupational risk prevention technician, with more than 15 years of experience in different sectors: waste, renewable energies, industries, environmental impact assessment, local and regional administration, and conservation biology.
- » Teacher of Certificate of Professionalism and approved by the EOI in environmental, waste and water issues.
  - » Member of the Association Harmush Estudio y Conservación de Fauna, which develops international projects on endangered species and various publications.



**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.
- » Experience as an Environmental Consultant in various industrial sectors.
- » Safety Advisor for the transport of dangerous goods by road.

**Mr. Titos Lombardo, Ignacio**

- » Degree in Environmental Sciences from the University of Castilla-La Mancha.
- » Master's Degree in Integrated Quality and Environmental Management.
- » Senior Technician in Occupational Risk Prevention.
- » Partner-Consultant of Implantación Integral de Sistemas de Calidad, S.L., a consulting firm created in 1998 and specialized in the development of quality, environmental and prevention consulting and auditing projects and in advising local corporations on environmental matters.
- » The company has been in business for more than 12 years, advising and auditing companies in sectors as varied as waste, water, food, industrial, transportation, renewable energy, etc.
- » Teacher of Professional Certificates.
- » Currently he is the administrator of Imsica Especialización, S.L., an entity specialized in the in-company specialization of its clients.
- » Teacher of the Recicla2 Project for the promotion of waste management and recycling and the creation of green companies.

04

# Structure and Content

The structure of the contents has been designed by the best professionals in the waste and wastewater 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. Waste Management

- 1.1. What is Considered as Waste?
  - 1.1.1. Evolution of Waste
  - 1.1.2. Current Situation
  - 1.1.3. Future Perspectives
- 1.2. Existing Waste Flows
  - 1.2.1. Waste Flow Analysis
  - 1.2.2. Grouping of Flows
  - 1.2.3. Flow Characteristics
- 1.3. Waste Classification and Characteristics
  - 1.3.1. Classification According to Standards
  - 1.3.2. Classification According to Management
  - 1.3.3. Classification According to Origin
- 1.4. Characteristics and Properties
  - 1.4.1. Chemical Characteristics
  - 1.4.2. Physical Characteristics
    - 1.4.2.1. Humidity
    - 1.4.2.2. Specific Weight
    - 1.4.2.3. Granulometry
  - 1.4.3. Hazard Characteristics
- 1.5. Waste Problems. Origin and Types of Waste
  - 1.5.1. Main Problems of Waste Management
  - 1.5.2. Problems in Generation
  - 1.5.3. Problems in Transport and Final Treatment
- 1.6. Environmental Responsibility
  - 1.6.1. Liabilities for Environmental Damage
  - 1.6.2. Damage Prevention, Mitigation and Remediation
  - 1.6.3. Financial Guarantees
  - 1.6.4. Environmental Requirement Procedures
- 1.7. Integrated Pollution Prevention and Control
  - 1.7.1. Fundamental Aspects
  - 1.7.2. Environmental Requirement Procedures
  - 1.7.3. Integrated Environmental Authorization (AAI) and Review of AAI
  - 1.7.4. Inespecialization and Communication
  - 1.7.5. Best Available Techniques (BAT)
- 1.8. European Emission Source Inventory
  - 1.8.1. Emission Inventory Background
  - 1.8.2. European Pollutant Emission Inventory
  - 1.8.3. European Pollutant Release and Transfer Register (E-PRTR)
  - 1.8.4. Legal Framework of PRTR in Spain
  - 1.8.5. PRTR-Spain
- 1.9. Environmental Impact Assessment
  - 1.9.1. Environmental Impact Assessment (EIA)
  - 1.9.2. EIA Administrative Procedures
  - 1.9.3. Environmental Impact Assessment (EIA)
  - 1.9.4. Abbreviated Procedures
- 1.10. Climate Change and the Fight Against Climate Change
  - 1.10.1. Elements and Factors that Determine the Climate.
  - 1.10.2. Definition of Climate Change. Effects of Climate Change
  - 1.10.3. Actions Against Climate Change
  - 1.10.4. Organizations Facing Climate Change
  - 1.10.5. Predictions on Climate Change
  - 1.10.6. Bibliographical References

## Module 2. Municipal Solid Waste Management

- 2.1. Sources and Production
  - 2.1.1. Sources of Origin
  - 2.1.2. Composition Analysis
  - 2.1.3. Evolution of Production
- 2.2. Municipal Solid Waste Management
  - 2.2.1. Classification According to Standards
  - 2.2.2. Characteristics of Municipal Solid Waste
- 2.3. Effects on Public Health and the Environment
  - 2.3.1. Health Effects of Air Pollution
  - 2.3.2. Health Effects of Chemicals
  - 2.3.3. Effects on Fauna and Flora
- 2.4. Importance of Minimization
  - 2.4.1. Waste Reduction
  - 2.4.2. 5Rs and their Benefits
  - 2.4.3. Fractionation and Problems
- 2.5. Phases of Operational Waste Management
  - 2.5.1. Waste Containerization.
  - 2.5.2. Waste Collection Types and Systems
  - 2.5.3. Transfer and Transportation.
- 2.6. Types of Urban Waste Treatment I
  - 2.6.1. Sorting Plants.
  - 2.6.2. Composting.
  - 2.6.3. Biomethanization.
  - 2.6.4. Energy Recovery.
- 2.7. Types of Urban Waste Treatment II
  - 2.7.1. Landfills
  - 2.7.2. Environmental Impact of Landfills
  - 2.7.3. Landfill Sealing.
- 2.8. Municipal Management of MSW Landfills
  - 2.8.1. Social Perception and Physical Situation
  - 2.8.2. MSW Landfill Management Models
  - 2.8.3. Current MSW Landfill Issues
- 2.9. Waste as a Source of Business
  - 2.9.1. From Health Protection to Circular Economy
  - 2.9.2. The Economic Activity of Waste Management
  - 2.9.3. From Waste to Resource
  - 2.9.4. Waste as a Substitute for Raw Materials
- 2.10. Digitalization in the Management Process
  - 2.10.1. Classification Based on Deep Learning
  - 2.10.2. Container Sensing
  - 2.10.3. Smart Bins

### Module 3. Industrial Waste Management

- 3.1. Characterization of Industrial Waste
  - 3.1.1. Classification According to the Proposal at Origin according to RD 833/88 and RD 952/97.
  - 3.1.2. Classification According to Regulation 1357/2014, Based on the Amendments Introduced by Regulation 1272/08 (CLP) and Regulation 1907/06 (REACH).
  - 3.1.3. Classification According to the European Waste List
- 3.2. Industrial Waste Management
  - 3.2.1. Industrial Waste Producer
  - 3.2.2. Industrial Waste Management
  - 3.2.3. Fines
- 3.3. Internal Management of Industrial Waste
  - 3.3.1. Compatibility and Initial Segregation
  - 3.3.2. Internal Transport of Waste
  - 3.3.3. Internal Storage Waste
- 3.4. Waste Minimization
  - 3.4.1. Minimization Methods and Techniques
  - 3.4.2. Minimization Plan
- 3.5. Fines
  - 3.5.1. Enforcement of Environmental Legislation According to the Nature of the Waste
  - 3.5.2. Enforcement of Local, Regional or State environmental legislation
- 3.6. Waste Flow I
  - 3.6.1. Used Oil Management.
  - 3.6.2. Packaging Waste Management.
  - 3.6.3. Construction and Demolition Waste Management.
- 3.7. Waste Flow II
  - 3.7.1. Batteries and Accumulators Management.
  - 3.7.2. Packaging Waste Management.
- 3.8. Waste Flow III
  - 3.8.1. End-of-Life Vehicle Management.
  - 3.8.2. Decontamination Methods, Treatment and Management.
- 3.9. Non-hazardous Industrial Waste
  - 3.9.1. Typology and Characterization of Non-Hazardous Industrial Waste
  - 3.9.2. Transportation of Goods According to their Volume
- 3.10. By-products Market
  - 3.10.1. Industrial By-Products
  - 3.10.2. National and European Situation Analysis
  - 3.10.3. By-product Exchange



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*This specialization will allow you to progress in your career in a comfortable way”*

05

# Methodology

This training provides you with a different way of learning. Our methodology uses a cyclical learning approach: **Re-learning**.

This teaching system is used 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 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 Global 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 Global 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.*

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images, 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.



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 suggesting that observing third-party Postgraduate Diplomas can be useful.

Learning from an Postgraduate Diploma 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 specialization a Postgraduate Diploma in Waste and Wastewater: a high added value qualification for any professional in this area”*

This program will allow you to obtain your **Postgraduate Diploma in Waste and Wastewater** 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.

Title: **Postgraduate Diploma in Waste and Wastewater**

Modality: **online**

Duration: **6 months**

Accreditation: **24 ECTS**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University 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 quality  
development language  
classroom



## Postgraduate Diploma Waste and Wastewater

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