Postgraduate Certificate

Urban Drinking Water Distribution and Network Design

tech global university

Postgraduate Certificate

Urban Drinking Water Distribution and Network Design

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

Website: **www.techtitute.com/us/engineering/postgraduate-certificate/urban-drinking-water-distribution-network-design**

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01

Introduction

This complete TECH program focuses on providing the engineer with the necessary competencies to successfully practice in one of the most extensive phases of water supply: distribution. In this area, the types of existing networks will be explained, as well as the fundamental design criteria for their optimization. In the same way, the complementary elements, i.e., valves and their practical use, will be studied in depth. This knowledge will help the engineer to work as a production manager, knowing not only the elements of the drinking water distribution network, but also the communication systems and all the elements that compose them.

With this Postgraduate Certificate, the student will be able to work in the drinking water distribution sector, knowing everything necessary to act with success in this area"

The drinking water distribution phase of a water supply system is the most extensive, in terms of facilities, in an urban water service. This has a double implication, since on the one hand the planning of the design of your network is of vital importance, and on the other hand the maintenance and management of the network will determine the success of the professional responsible for this task.

Therefore, this Postgraduate Certificate in Urban Drinking Water Distribution and Network Design shows the existing network typologies and outlines the design criteria that are essential for the optimization of their layout. In addition, the EPANET software will be presented as a support tool for network modeling.

The complementary elements of the network such as the valves will be shown to the student from a practical point of view, which will allow him to obtain an accelerated knowledge of this equipment through the experience of the module's teacher.

For an effective management of the network, the professional with the profile of production manager needs to know the current communication systems through all the elements that compose them. This course not only develops them, but also presents software for the management of these communications.

In order to be able to undertake the difficult task of hydraulic optimization of the network, the main management indicators related to the minimization of water losses will be presented. With this, the student will be able to establish an effective control plan of the network, as well as to carry out its follow-up.

Finally, the costs related to the management of a drinking water supply service will be analyzed, grouping them into revenues, from the billing of subscribers, and expenses, the most relevant being personnel and electricity and the purchase of water when it is imported from another system.

All this, condensed in an intensive six-week program and in an online format that will give professionals the opportunity to study from wherever they want, thus being able to elevate their career to a higher level. A mode of study suitable for today's times and with the academic endorsement of excellence that comes with studying at TECH.

This **Postgraduate Certificate in Urban Drinking Water Distribution and Network Design** contains the most complete and up-to-date program 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

Stand out in a booming sector with enormous potential and become a part of the global change based on excellence"

Studying here ensures that you will receive the best content from the best professionals in the sector. This is the only way to ensure your professional success"

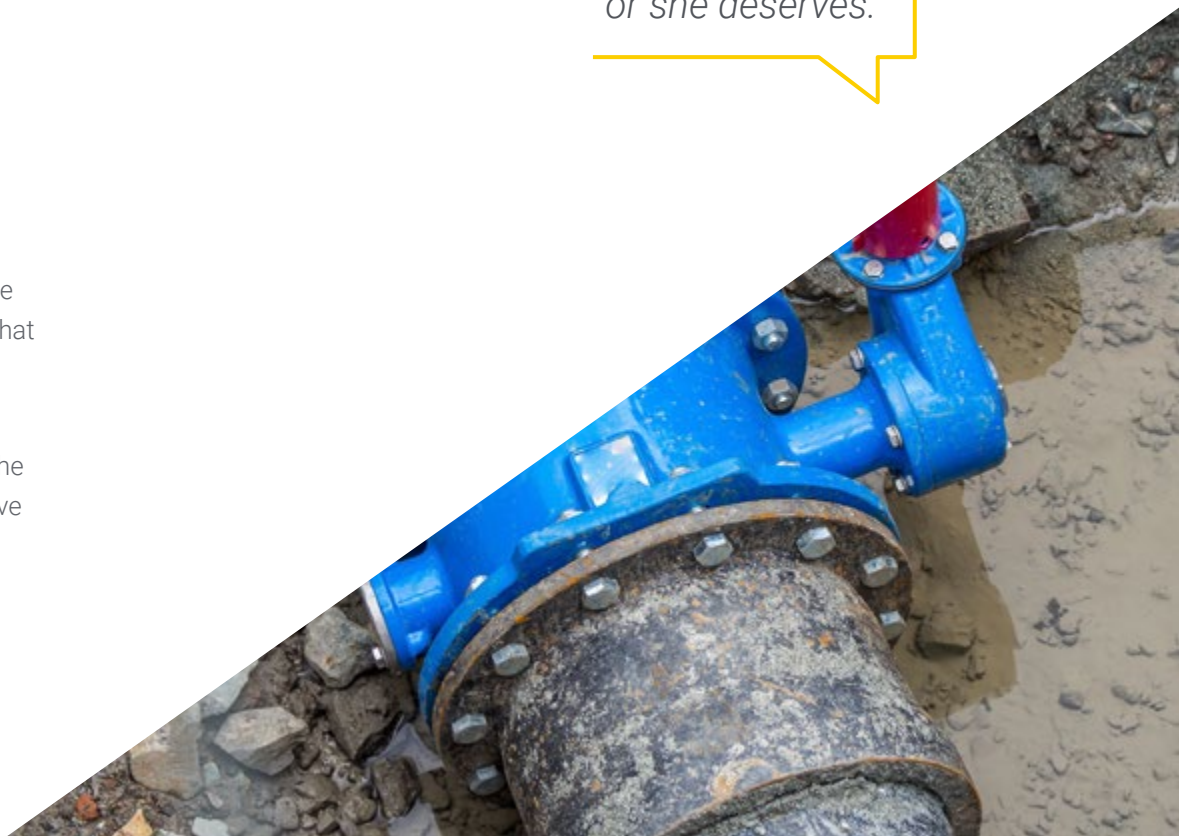
Learn all the factors that influence the design of drinking water networks and start advancing your career.

High-level education that will help the engineer get all the improvements he or she deserves.

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 throughout the program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced engineering experts.



02

Objectives

This Postgraduate Certificate has one main and fundamental purpose: the specialization of the engineer and his academic orientation towards the urban drinking water distribution sector and network design for this use.

TECH is all about you: give your career the boost it needs and specialize in a booming sector"

General Objectives

- 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

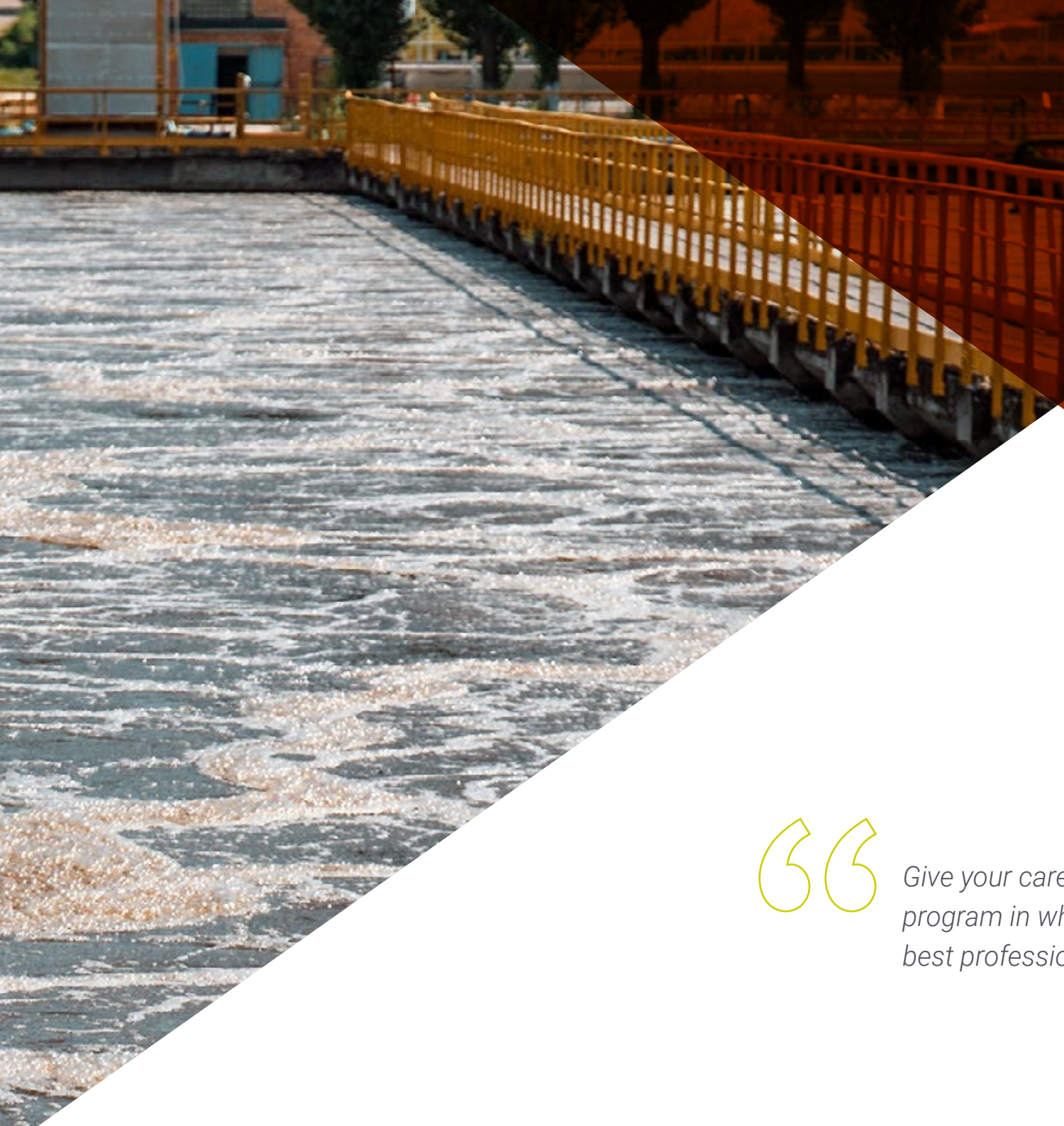
- Quickly identify the problems associated with a supply network based on the design typology of the network itself
- Diagnose the deficiencies of an existing network based on the most important operating parameters. With the possibility of capturing it in the most implemented simulation software in the sector such as EPANET
- Be able to draw up and supervise a preventive and corrective maintenance plan for the drinking water distribution network
- Control the revenues and costs of a supply system in order to maximize the economic performance of an administrative concession

"With the objective of teaching students how to design drinking water networks, TECH has designed the most complete compendium of contents in the sector"

03

Course Management

By studying at this University, students will have a group of first-class professionals who will be in charge of providing them with the best information and didactic materials available in the market. For this purpose, this Postgraduate Certificate has a highly qualified team with extensive experience in the sector, which will offer the best tools for the student in the development of their skills during the program. In this way, the student has the guarantees required to specialize at international level in a booming sector that will catapult them to professional success.



Give your career a 180º turn by taking this program in which you will work with the best professionals in the sector"

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

04

Structure and Content

To ensure that students receive the most up-to-date and complete information on the market, TECH professionals have designed a compendium of content with high academic rigor and adapted to the current demands of the labor market. In this way, the library of contents that the student will have will serve as a necessary theoretical support when facing real situations in his daily practice as an engineer.

A curriculum of excellence, created for professionals of excellence"

Module 1. Drinking Water Distribution. Layouts and Practical Criteria for Network Design

1.1. Types of Distribution Networks
- 1.1.1. Classification Criteria
- 1.1.2. Branched Distribution Networks
- 1.1.3. Meshed Distribution Networks
- 1.1.4. Mixed Distribution Networks
- 1.1.5. Upstream Distribution Networks
- 1.1.6. Downstream Distribution Networks
- 1.1.7. Piping Hierarchy

1.2. Distribution Network Design Criteria. Modeling
- 1.2.1. Demand Modulation
- 1.2.2. Flow Velocity
- 1.2.3. Pressure
- 1.2.4. Chlorine Concentration
- 1.2.5. Dwell Time
- 1.2.6. Modeling with EPANET

1.3. Elements of a Distribution Network
- 1.3.1. Fundamental Principles
- 1.3.2. Collection Elements
- 1.3.3. Pumping
- 1.3.4. Storage Elements
- 1.3.5. Distribution Elements
- 1.3.6. Control and Regulation Elements (Suction Cups, Valves, Drainage, etc.)
- 1.3.7. Measuring Elements

1.4. Pipelines
- 1.4.1. Features
- 1.4.2. Plastic Pipes
- 1.4.3. Non-Plastic Pipes

1.5. Valves
- 1.5.1. Shut-off Valves
- 1.5.2. Manifold Valves
- 1.5.3. Check or Non-Return Valves
- 1.5.4. Regulating and Control Valves

1.6. Remote Control and Remote Management
- 1.6.1. Elements of a Remote-Control System
- 1.6.2. Communication Systems
- 1.6.3. Analog and Digital Information
- 1.6.4. Management Software
- 1.6.5. Digital Twins

1.7. Efficiency of Distribution Networks
- 1.7.1. Fundamental Principles
- 1.7.2. Calculation of Hydraulic Efficiency
- 1.7.3. Efficiency Improvement. Minimization of Water Losses
- 1.7.4. Monitoring Indicators

1.8. Maintenance Plan
- 1.8.1. Objectives of the Maintenance Plan
- 1.8.2. Preparation of the Preventive Maintenance Plan
- 1.8.3. Preventive Maintenance Tanks
- 1.8.4. Preventive Maintenance of Distribution Networks
- 1.8.5. Preventive Maintenance of Catchments
- 1.8.6. Corrective Maintenance

1.9. Operational Logging
- 1.9.1. Water Volumes and Flow Rates
- 1.9.2. Water Quality
- 1.9.3. Energy Consumption
- 1.9.4. Malfunctions
- 1.9.5. Pressure
- 1.9.6. Maintenance Plan Records

1.10. Financial Management
- 1.10.1. Importance of Economic Management
- 1.10.2. Revenues
- 1.10.3. Costs

"Study in a comfortable way, without uncomfortable displacements and with the endorsement of a great 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.

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.

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

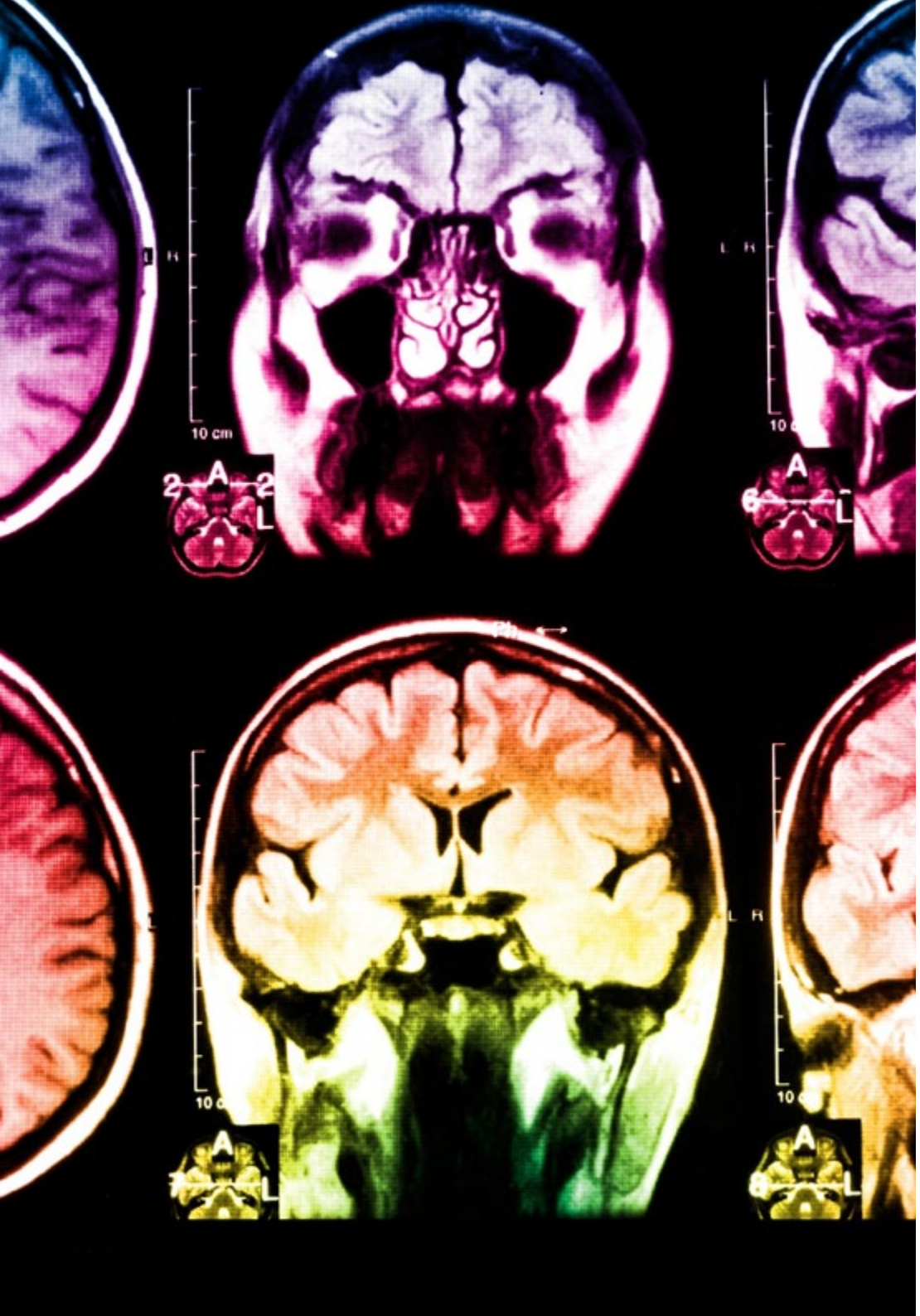
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

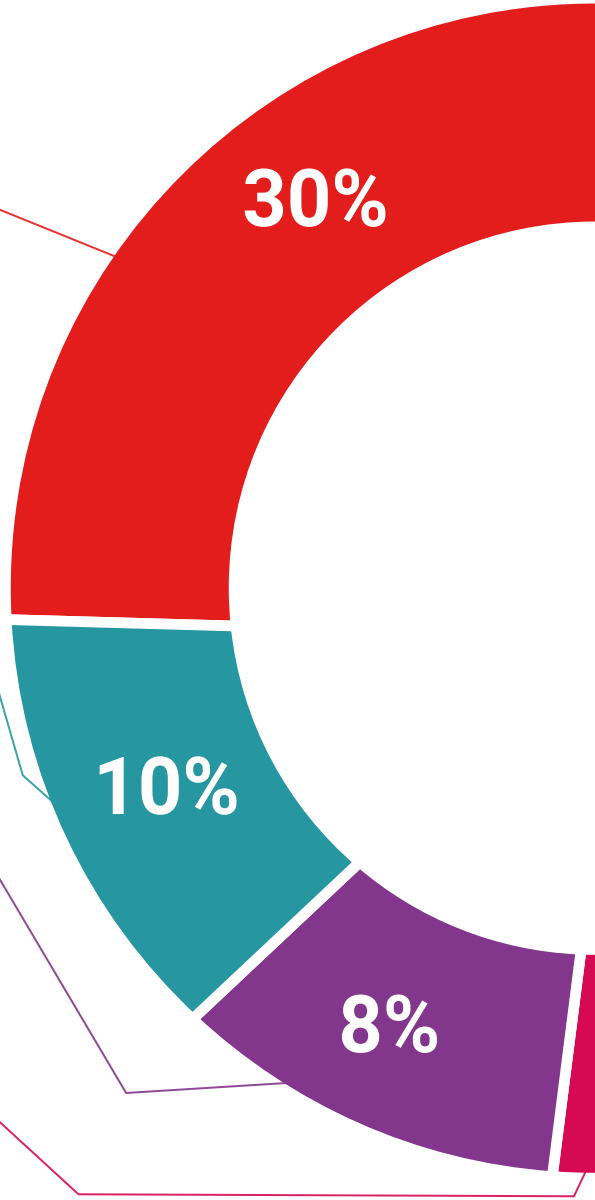
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

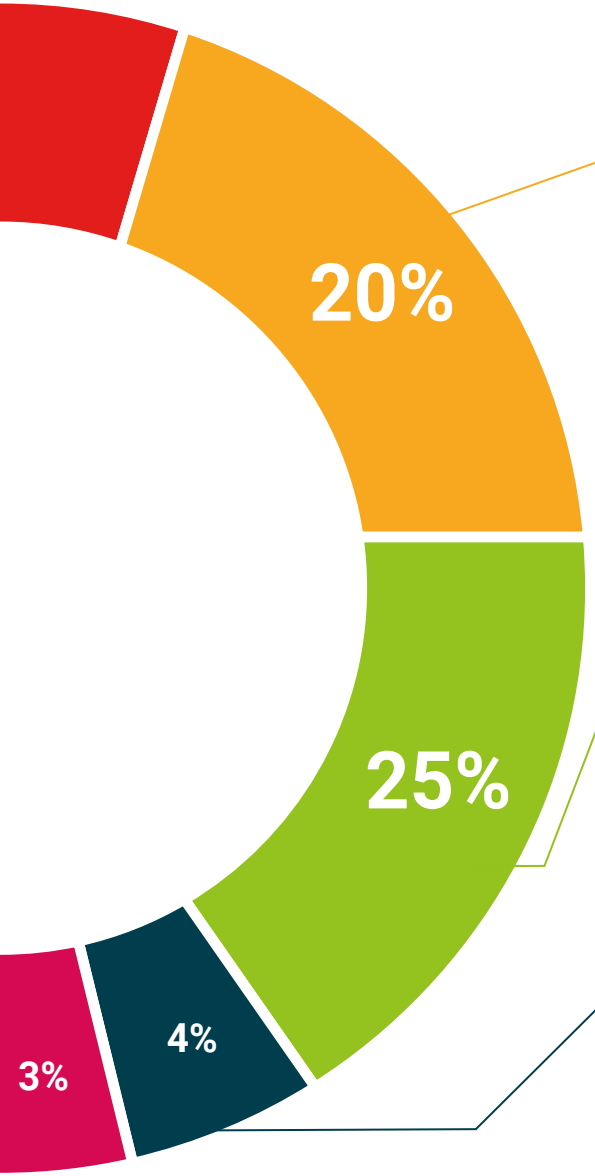
Practising Skills and Abilities

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 Urban Drinking Water Distribution and Network Design guarantees, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.

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

This program will allow you to obtain your **Postgraduate Certificate in Urban Drinking Water Distribution and Network Design** 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 Certificate in Urban Drinking Water Distribution and Network Design**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**

tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Certificate in Urban Drinking Water Distribution and Network Design

This is a program of 180 hours of duration equivalent to 6 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Rector

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country.

Unique TECH Code: AFWORD23S techtitute.com/certificates

*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"

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Postgraduate Certificate

Urban Drinking Water Distribution and Network Design

- Modality: **online**
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- Certificate: **TECH Global University**
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Postgraduate Certificate

Urban Drinking Water Distribution and Network Design

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