

# Postgraduate Diploma Environmental and Energy Management Systems in Organizations



## Postgraduate Diploma Environmental and Energy Management Systems in Organizations

Course Modality: **Online**

Duration: **6 months.**

Certificate: **TECH Technological University**

Teaching Hours: **450 h.**

Website: [www.techtute.com/engineering/postgraduate-diploma/postgraduate-diploma-environmental-energy-management-systems-organizations](http://www.techtute.com/engineering/postgraduate-diploma/postgraduate-diploma-environmental-energy-management-systems-organizations)

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# 01

# Introduction

For the engineering professional, incorporating the most extensive and up-to-date knowledge in the new energy management systems, adapted to ISO 50001: 2018, into their work is essential to provide the necessary quality in this area to any project. This program will also allow them to include in their skills, supported by an exhaustive analysis, the mastery of ISO 14001 and 19011. A compendium of knowledge that will allow them to act with safety and a complete adaptation to the reality of the sector.



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*A highly specialized Postgraduate Diploma that will give you the security that comes from mastering all the aspects involved in the environmental and energy management of organizations"*

In this process of professional growth, the energy management system presented in the latest version of the ISO 50001 standard will be studied: 2018, which incorporates into this scheme the high-level structure, the requirements of ISO 14001 Environmental Management Systems, and the basic requirements of EMAS, analyzing the main differences with ISO 14001.

The requirements and procedures for the development of internal audits of company management systems are studied in depth, analyzing the different types of audits and the principles by which they must be governed, analyzing the ISO 19011 standard.

The tools and techniques necessary to carry out the audits will be presented, as well as the verification process of the methodology applied.

In addition, specific requirements for the development of management system audits based on ISO 14001 and ISO 50001 standards will be analyzed.

By completing and passing the assessments on this program, the student will obtain a solid knowledge of the rules and regulations to be applied in relation to environmental and energy management in organizations. A complete, high-intensity program, which will allow incorporating into practice the most updated knowledge in this field of work. A highly interesting subject due to its current relevance and the mandatory integration of the standards that will be studied in the program.

With an approach focused on efficiency, this program has been created to allow students to optimize their efforts and achieve the best learning results in the shortest possible time. In addition, as it is a 100% online Postgraduate Diploma, the student is not constrained by fixed timetables or the need to move to another physical location, but can access the contents at any time of the day, balancing their professional or personal life with their academic life.

This **Postgraduate Diploma in Environmental and Energy Management Systems in Organizations** contains the most complete and up-to-date educational program on the market. The most important features of the specialization are:

- ◆ Practical cases presented by experts in Environmental and Energy Management in Organizations
- ◆ 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 the self-assessment process can be carried out to improve learning
- ◆ Its special emphasis on innovative methodologies in Environmental and Energy Management in Organizations
- ◆ 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



*Incorporate to your professional skills, the most extensive and up-to-date knowledge of applicable standards and regulations"*

“ *A 100% online Postgraduate Diploma that will allow you to combine your studies with your professional work with maximum organizational flexibility*”

Supported by excellent multimedia content, developed with the latest educational technology, this Postgraduate Diploma will provide the professional with situated and contextual learning, i.e., study in a simulated environment that will provide immersive learning 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 experts in Environmental and Energy Management in Organizations

*A complete analysis of all the factors that influence the determination of a project's energy baseline.*

*You will have the most complete teaching material, with the support of the best audiovisual systems on the educational market.*



02

# Objectives

The Postgraduate Diploma in Environmental and Energy Systems Management in Organizations has the general objective of boosting the performance capacity of professionals in this field so that they can incorporate the main advances in this field of work and intervention.







“

*An intensive tour through all the aspects you need to know about energy regulations, savings and sustainability with the most innovative and real vision”*



## General Objectives

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- ◆ Understand the impact of a city's energy consumption and the major elements that make it function, the buildings
- ◆ Analyze energy consumption and demand in depth, as these are the key determinants of a building's energy comfort
- ◆ Prepare the student in the general knowledge of the different norms, standards, regulations and existing legislation, which will allow him/her to deepen in the specific ones that act in the development of procedures for the actions in the field of energy saving in buildings
- ◆ Provide fundamental knowledge to support the rest of the modules and related information search tools
- ◆ Apply the key aspects of the circular economy in building using Life Cycle Analysis and Carbon Footprint tools to establish plans to reduce environmental impact, as well as to meet the criteria of green public procurement
- ◆ Prepare the student to perform energy audits in accordance with EN 16247-2, provide energy services and energy certification to establish improvement measures to increase energy savings and sustainability in buildings
- ◆ Delve into the importance of the architectural tools that will make it possible to make the best use of the climatic environment of a building
- ◆ Carry out an exhaustive analysis on the technique of each of the renewable energies. This will allow the student to have the ability and vision to design the best options for choosing an energy option in terms of available resources
- ◆ Internalize and expand on self-consumption, as well as the advantages of its application in buildings
- ◆ Choose the most efficient equipment and detect deficiencies in the electrical installation to reduce consumption, optimize installations and establish a culture of energy efficiency in the organization. As well as the design of electric vehicle charging point infrastructures for their implementation in buildings
- ◆ Delve into the different cooling and heating generation systems most commonly used today
- ◆ Perform a complete analysis of the main maintenance operations of air conditioning equipment, its cleaning and replacement of parts
- ◆ In-depth breakdown of the properties of light involved in building energy savings
- ◆ Master and apply the techniques and requirements for the design and calculation of lighting systems, seeking to comply with health, visual and energy criteria
- ◆ Delve into and analyze the different control systems installed in buildings, the differences between them, the applicability criteria in each case and the energy savings provided



*Give your CV a boost and compete among the best with this comprehensive refresher"*



## Specific Objectives

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### Module 1. Thermal Installations

- ♦ Master the different thermal air conditioning systems and their operation
- ♦ Thoroughly break down its components for machine maintenance
- ♦ Analyze the role of energy efficiency in the evolution of different systems

### Module 2. Lighting installations

- ♦ Apply the principles of lighting technology, its properties, differentiating the aspects that contribute to energy savings
- ♦ Analyze the criteria, characteristics and requirements of the different solutions that can be used in buildings
- ♦ Design and calculate lighting projects, improving energy efficiency
- ♦ Integrate health-enhancing lighting techniques as a benchmark in energy savings

### Module 3. Control installations

- ♦ Analyze the different installations, technologies and control systems applied to energy saving in buildings
- ♦ Differentiate between the different systems to be implemented, distinguishing the characteristics in each specific case
- ♦ Delve into how control installations bring energy savings to buildings by optimizing energy resources
- ♦ Master the principles of configuration of control systems used in buildings



03

# Course Management

A multidisciplinary teaching staff will offer the most up-to-date and comprehensive knowledge in this field, accompanying the professional during the learning process and making available their experience and real vision of the profession. A unique opportunity to learn directly from experts in this field of work.



“

*You will learn from experts in this sector, who will provide you with a specific and direct vision of the reality of this field of work"*

## Management



### Mr. Abreu Acosta, Guzmán

- ◆ Technician in the area of Territorial Planning and Management at Gestión y Planeamiento Territorial y Medioambiental de Canarias S.A.
- ◆ Degree in Law
- ◆ Occupational Health and Safety Auditor, Specialization in OSHAS 18001
- ◆ Degree in Environmental Sciences. UNIVERSITY OF HUELVA
- ◆ Lawyer in his own law firm, specialized in Urban Development and Environmental Law.
- ◆ Freelance consultant specializing in Risk Prevention, Quality and Environment.

## Professors

### Mr. Espinosa, César

- ◆ Head of the Environment Service of Arona City Council
- ◆ Degree in Law
- ◆ Recipient of the IV Felipe González Vicent Prize, Faculty of Law ULL in 1994
- ◆ UNESCO Global Geopark El Hierro Technical Manager
- ◆ Technical Manager El Hierro World Biosphere Reserve
- ◆ Legal Coordinator of the Department of Rural and Marine Affairs and the Environment of the Island Council of El Hierro (2011-2015)
- ◆ Technical Project Manager

### Mr. Palanco, César

- ◆ Director - Manager INTENSA PROMILAB
- ◆ Industrial Engineer. Mechanical Intensification
- ◆ Industrial Technical Engineer. Industrial Electronics Specialty
- ◆ Construction Manager
- ◆ Installation and testing technician
- ◆ Purchasing Manager TOGOGAS Huelva S.L.
- ◆ Installation technician TOGOGAS Huelva S.L.
- ◆ Commercial Delegate TOGOGAS Huelva S.L.

**Ms. Granell García, Lilia**

- ◆ Manager and Administrator of Recap Canarias Finance
- ◆ Degree in Physical Sciences, specializing in Fundamental Physics
- ◆ Recap ibérica Financa, ltd
- ◆ Technical and commercial director SOTEC group
- ◆ Technical and commercial director SEIFERMANN
- ◆ CEO of CERCAN

**Mr. Contreras Acuña, Manuel**

- ◆ Teacher (Secondary, Vocational Training)
- ◆ Doctor in Chemical Sciences Faculty of Experimental Sciences, University of Huelva
- ◆ Master's Degree in Instrumental Techniques in Chemistry, Faculty of Experimental Sciences, University of Huelva
- ◆ Triple Master's Degree in Occupational Health and Safety, Quality and Environmental Management
- ◆ Interim Substitute Professor Department: Chemistry and Materials Science
- ◆ Contract Researcher Department: Chemistry and Materials Science

**Mr. Toscano, Manuel**

- ◆ Professor of the Department of Earth Sciences of the University of Huelva
- ◆ Degree in Geological Sciences from the University of Granada
- ◆ Technical Engineer in Drilling and Mining Prospecting
- ◆ Technical Engineer in Energy, Fuels and Explosives Resources
- ◆ Degree in Mine Exploitation from the University of Huelva
- ◆ Author and/or co-author of more than ninety national and international contributions
- ◆ National and international projects financed by the Andalusia Council, the Spanish government and the European Union

**Mr. Bueno Márquez, Pedro**

- ◆ Technician of the Directorate General of Vocational Training, Ministry of Education and Sports
- ◆ Chemical Engineering 1997 - 2002 University of Huelva
- ◆ Postgraduate Course on Renewable Energy Management and Development, Catholic University of Avila
- ◆ Technical Teacher of Vocational Training. Department of Education and Sports
- ◆ Andalusian Energy Agency Technician
- ◆ Project Engineer. Aldesa Engineering & Services
- ◆ Project Engineer. Andalusian Studies Group (Grande S.L.)

# 04

# Structure and Content

The educational program includes all the contents required to achieve a broad and specific knowledge of everything involved in environmental and energy management systems, through a continuous process of competence growth that will boost the theoretical and practical capacity of the students.





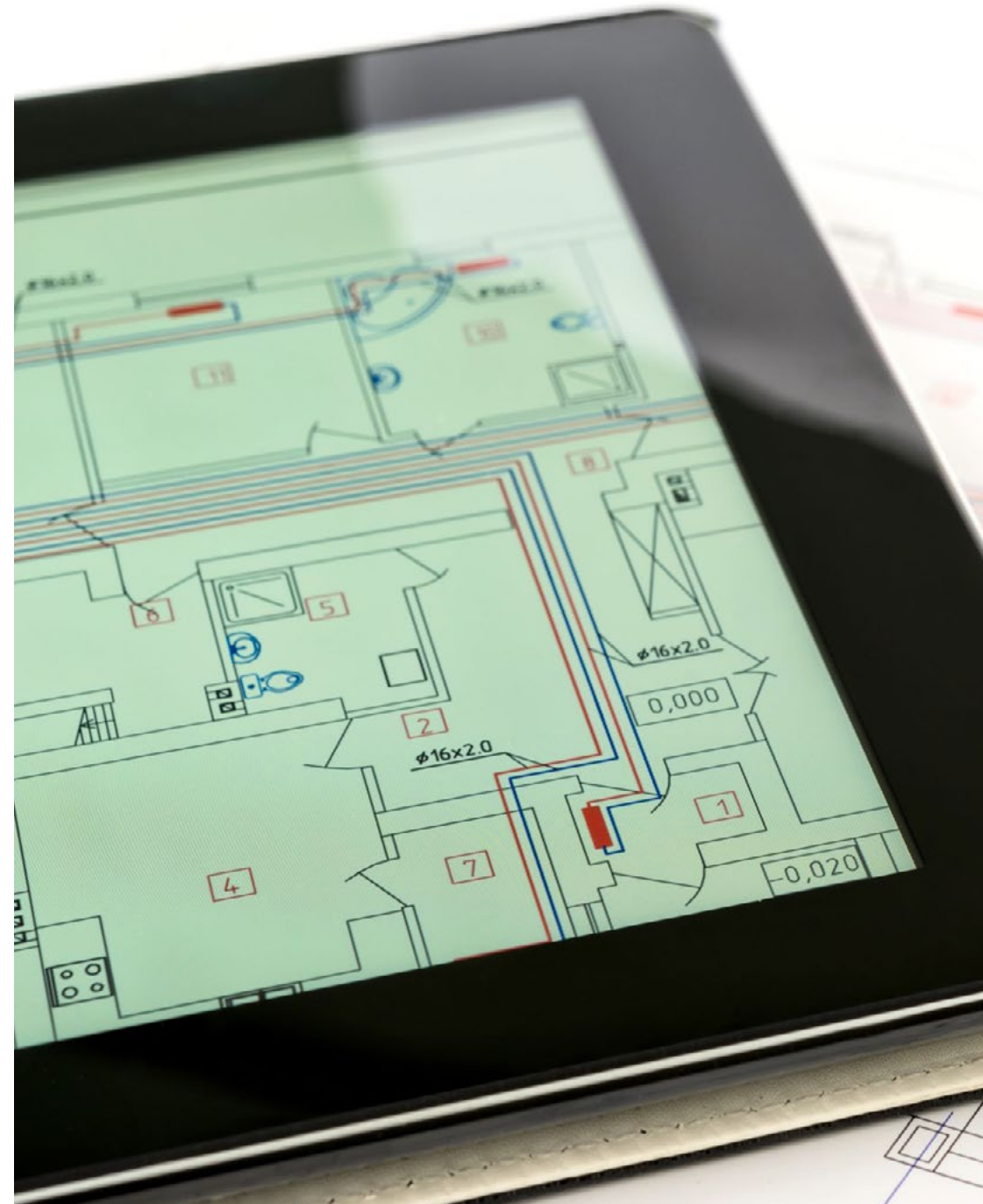


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*A comprehensive compendium of updates and knowledge of major professional interest that will take you through the learning process in an intensive and stimulating way”*

## Module 1. Energy Management Tools

- 1.1. Thermal Installations in Buildings
  - 1.1.1. Idealization of Thermal Installations in Buildings
  - 1.1.2. Thermal Machine Operation
  - 1.1.3. Pipe Insulation
  - 1.1.4. Duct Insulation
- 1.2. Gas-Fired Heat Production Systems
  - 1.2.1. Gas-Fired Heating Equipment
  - 1.2.2. Components of a Gas Production System
  - 1.2.3. Vacuum Test
  - 1.2.4. Good Practices in Gas Heat Systems
- 1.3. Oil-Fired Heat Production Systems
  - 1.3.1. Oil-Fired Heating Equipment
  - 1.3.2. Components of an Oil-Fired Heat Production Systems
  - 1.3.3. Good Practices in Oil-Fired Heating Systems
- 1.4. Oil-Fired Heat Production Systems
  - 1.4.1. Biomass Heating Equipment
  - 1.4.2. Components of a Biomass Heat Production System
  - 1.4.3. The Use of Biomass in the Home
  - 1.4.4. Good Practices in Biomass Production Systems
- 1.5. Heat Pumps
  - 1.5.1. Heat Pump Equipment
  - 1.5.2. Components of a Heat Pump
  - 1.5.3. Advantages and Disadvantages
  - 1.5.4. Good Practices in Heat Pump Equipment
- 1.6. Refrigerant Gases
  - 1.6.1. Knowledge of Refrigerant Gases
  - 1.6.2. Types of Refrigerant Gas Classification
- 1.7. Refrigeration Systems
  - 1.7.1. Cooling Equipment
  - 1.7.2. Typical Installations
  - 1.7.3. Other Refrigeration Installations
  - 1.7.4. Revision and Cleaning of Refrigeration Components





- 1.8. HVAC Systems
  - 1.8.1. Types of HVAC Systems
  - 1.8.2. Domestic HVAC Systems
  - 1.8.3. Correct Use of HVAC Systems
- 1.9. DHW Systems
  - 1.9.1. Types of DHW Systems
  - 1.9.2. DHW Systems
  - 1.9.3. Correct Use of DHW Systems
- 1.10. Maintenance of Thermal Installations
  - 1.10.1. Boiler and Burner Maintenance
  - 1.10.2. Maintenance of Auxiliary Components
  - 1.10.3. Refrigerant Gas Leak Detection
  - 1.10.4. Refrigerant Gas Recovery

## Module 2. Lighting installations

- 2.1. Light Sources
  - 2.1.1. Lighting Technology
    - 2.1.1.1. Properties of Light
    - 2.1.1.2. Photometry
    - 2.1.1.3. Photometric Measurements
    - 2.1.1.4. Luminaires
    - 2.1.1.5. Auxiliary Electrical Equipment
  - 2.1.2. Traditional Light Sources
    - 2.1.2.1. Incandescent and Halogen
    - 2.1.2.2. High and Low Pressure Sodium Vapor
    - 2.1.2.3. Other Technologies: Induction, Xenon
- 2.2. LED Technology
  - 2.2.1. Principle of Operation
  - 2.2.2. Electrical Characteristics
  - 2.2.3. Advantages and Disadvantages
  - 2.2.4. LED Luminaires. Optical
  - 2.2.5. Auxiliary Equipment. Driver

- 2.3. Interior Lighting Requirements
  - 2.3.1. Standards and Regulations
  - 2.3.2. Lighting Project
  - 2.3.3. Quality Criteria
- 2.4. Outdoor Lighting Requirements
  - 2.4.1. Standards and Regulation
  - 2.4.2. Lighting Project
  - 2.4.3. Quality Criteria
- 2.5. Lighting Calculations with Calculation Software. DIALux
  - 2.5.1. Features
  - 2.5.2. Menus.
  - 2.5.3. Project Design
  - 2.5.4. Obtaining and Interpreting Results
- 2.6. Lighting Calculations with Calculation Software. EVO
  - 2.6.1. Features
  - 2.6.2. Advantages and Disadvantages
  - 2.6.3. Menus.
  - 2.6.4. Project Design
  - 2.6.5. Obtaining and Interpreting Results
- 2.7. Energy Efficiency in Lighting
  - 2.7.1. Standards and Regulations
  - 2.7.2. Energy Efficiency Improvement Measures
  - 2.7.3. Integration of Natural Light
- 2.8. Biodynamic Lighting
  - 2.8.1. Light Pollution
  - 2.8.2. Circadian Rhythms
  - 2.8.3. Harmful Effects
- 2.9. Calculation of Interior Lighting Projects
  - 2.9.1. Residential Buildings
  - 2.9.2. Business Buildings
  - 2.9.3. Educational Centers
  - 2.9.4. Hospitals
  - 2.9.5. Public Buildings
  - 2.9.6. Industries
  - 2.9.7. Commercial and Exhibition Spaces

- 2.10. Calculation of Outdoor Lighting Projects
  - 2.10.1. Street and Road Lighting
  - 2.10.2. Facades
  - 2.10.3. Signs and Illuminated Signs

### Module 3. Control Installations

- 3.1. Home Automation
  - 3.1.1. State-of-the-Art
  - 3.1.2. Standards and Regulations
  - 3.1.3. Equipment
  - 3.1.4. Services
  - 3.1.5. Networks
- 3.2. Inmotics
  - 3.2.1. Characteristics and Regulations
  - 3.2.2. Building Automation and Control Technologies and Systems
  - 3.2.3. Technical Building Management for Energy Efficiency
- 3.3. Telemanagement
  - 3.3.1. System Determination
  - 3.3.2. Key Elements
  - 3.3.3. Monitoring Software
- 3.4. Smart Home
  - 3.4.1. Features
  - 3.4.2. Equipment
- 3.5. The Internet of Things IoT
  - 3.5.1. Technological Monitoring
  - 3.5.2. Standards
  - 3.5.3. Equipment
  - 3.5.4. Services
  - 3.5.5. Networks
- 3.6. Telecommunications Installations
  - 3.6.1. Key Infrastructure
  - 3.6.2. Television
  - 3.6.3. Radio
  - 3.6.4. Telephony

- 3.7. KNX, DALI Protocols
  - 3.7.1. Standardization
  - 3.7.2. Applications
  - 3.7.3. Equipment
  - 3.7.4. Design and Configuration
- 3.8. IP Networks WiFi
  - 3.8.1. Standards
  - 3.8.2. Features
  - 3.8.3. Design and Configuration
- 3.9. Bluetooth
  - 3.9.1. Standards
  - 3.9.2. Design and Configuration
  - 3.9.3. Features
- 3.10. Future Technologies
  - 3.10.1. Zigbee
  - 3.10.2. Programming and Configuration. Python
  - 3.10.3. Big Data

“

*Complete, efficient and convenient:  
this Postgraduate Diploma is the  
most interesting tool for professional  
growth in online teaching"*



05

# Methodology

This training program offers 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"*

### At TECH we use the Case Method

Our program offers a revolutionary method of skills and knowledge development. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

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*At TECH, you will 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 intensive Engineering program at TECH Technological University prepares you to face all the challenges in this field, 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.

“*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 is the most widely used learning system by 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 is the first university in the world to combine Harvard University case studies with a 100% online learning system based on repetition, which combines 8 different didactic elements in each lesson.

We enhance Harvard case studies 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 university 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.



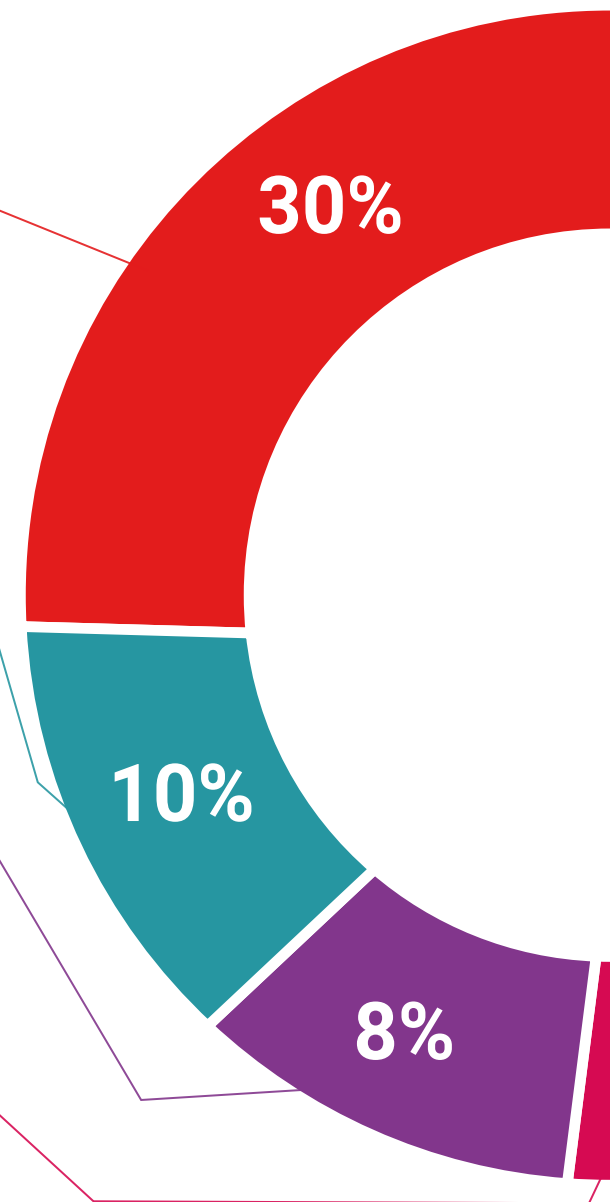
#### Practising Skills and Abilities

They will carry out activities to develop specific competencies and skills in each thematic 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 and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





**Case Studies**

They 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 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 multimedia content presentation training Exclusive system 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 your goals.



06

# Certificate

The Postgraduate Diploma in Environmental and Energy Systems Management in Organizations guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.



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*Successfully complete this training program  
and receive your university certificate  
without travel or laborious paperwork”*

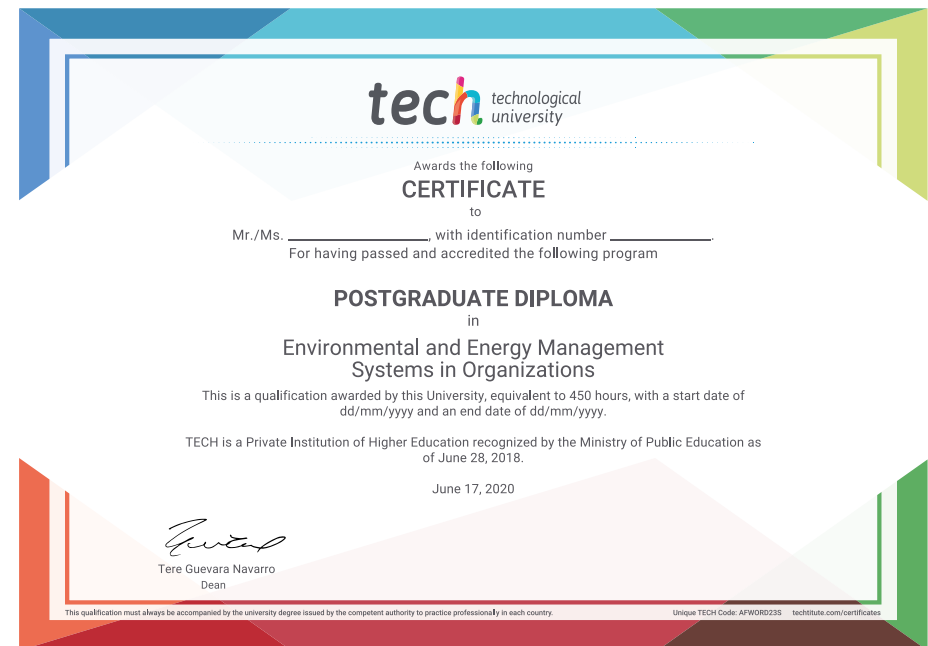
This **Postgraduate Diploma in Environmental and Energy Systems Management in Organizations** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Diploma**, issued by **TECH Technological University** via tracked delivery\*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Environmental and Energy Systems Management in Organizations**

Official N° of Hours: **450 hours**.



\*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  
development languages  
virtual classroom



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Environmental and  
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Course Modality: Online

Duration: 6 months.

Certificate: TECH Technological University

Teaching Hours: 450 h.

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