

# Postgraduate Diploma Energy Management Tools in Organizations



## Postgraduate Diploma Energy Management Tools in Organizations

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

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

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# 01

# Introduction

The inclusion in projects and organizations of the use of alternative energy sources, as well as the analysis and assessment of conventional ones, are aspects that the engineering professional involved in energy management has to contemplate with a totally updated view. From the complete study of regulatory standards to the analysis of current scenarios, more focused on energy efficiency and sustainability, this program will lead to the acquisition of the skills that will allow you to be a specialist in the current scenario of this sector.



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*Acquire the most complete knowledge in energy management of organizations and analyze the new scenario from the best specialists in this area”*

Fossil fuels, extraction, generation and associated environmental impacts will be analyzed. And aspects of electricity, renewable energy sources and nuclear energy will be covered.

The processes of energy transformation and distribution will be explained in detail, as well as the equipment required to carry out the transformation and distribution and how these processes affect the final energy consumed.

The current energy regulatory framework will be reviewed, focusing on the adaptation of European directives to the national market (Spain). Environmental impact assessment and climate change adaptation strategies are also covered.

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 students to incorporate into practice the most up-to-date 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 Postgraduate Diploma.

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 Professional Master's Degree 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 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 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



*A high quality Postgraduate Diploma that will boost the professional in their practice in the environmental and energy management sector"*

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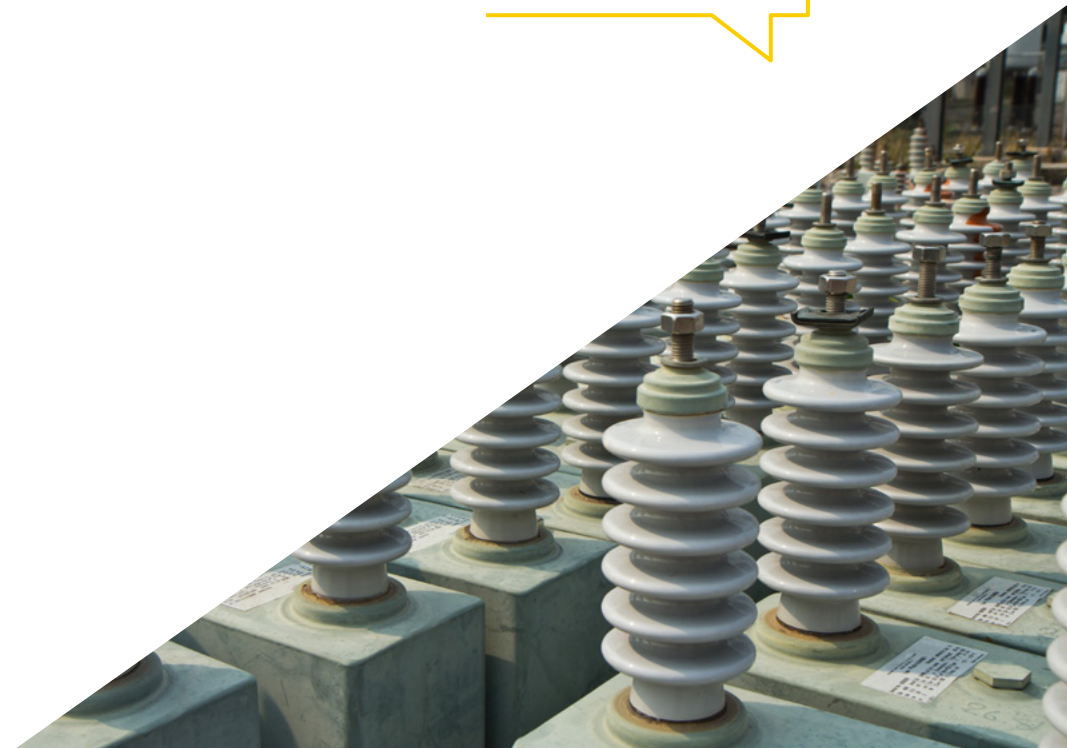
*A compendium of the highest value, which includes, in a totally up-to-date way, the regulatory reality that defines the application of the different energy alternatives”*

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

*The best audiovisual systems in the educational market, to provide you with an immersive learning experience.*



# 02 Objectives

The Postgraduate Diploma in Environmental and Energy 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.







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*With an objective of providing the highest quality, this program is a highly effective training tool created specifically for the best in the industry”*



## General Objectives

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- ◆ Gain an in-depth understanding into business organization and climate change mitigation strategies
- ◆ Develop a solid understanding of the main energy sources used globally and innovations in the energy industry
- ◆ Gain an in-depth understanding of electrical energy, breaking down the main consuming equipment and its applications
- ◆ Master the most commonly used fuels and fuel consuming equipment
- ◆ Training in the use of environmental and energy tools
- ◆ Conduct energy audits
- ◆ Conduct environmental impact assessments
- ◆ Develop and implement environmental and energy improvements
- ◆ In-depth breakdown of water and waste management to enable the learner to plan management plans and operational improvements
- ◆ Gain an in-depth understanding of the applicable legislation and regulatory framework for each of the program's topics
- ◆ Carry out the calculation of the carbon and water footprint of different facilities
- ◆ Carry out product life cycle analysis
- ◆ Develop a solid understanding of energy and environmental certifications
- ◆ Develop and implement an ISO 14001 environmental management system.
- ◆ Develop and implement an ISO 50001 energy management system
- ◆ Be able to carry out internal audits of management systems of organizations





## Specific Objectives

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### Module 1. Energy management tools

- ◆ Achieve a broad vision of the current applicable regulations
- ◆ Master regulatory inspections of energy systems
- ◆ Develop energy audits according to UNE EN 16247-1: 2012
- ◆ Identification and use of energy simulation tools
- ◆ Study consumption monitoring and asset management in detail
- ◆ Elaborate energy efficiency master plans

### Module 2. Energy sources

- ◆ Gain an in-depth understanding of current energy sources and their impact on the environment
- ◆ Analyze the operation, advantages and disadvantages of renewable energies
- ◆ Understand in detail the different processes of electrical and thermal generation
- ◆ Identify the operation and application of developing energy sources

### Module 3. Electrical energy

- ◆ Have in-depth knowledge of all aspects related to the generation and consumption of electrical energy
- ◆ Analyze the main characteristics of electrical energy consuming equipment.
- ◆ Identify the most important aspects of energy billing
- ◆ In-depth breakdown of all aspects related to the generation and consumption of energy generated from combustion
- ◆ Establish the main characteristics of combustion systems and fuels in detail



03

# Course Management

A multidisciplinary teaching faculty will offer the most up-to-date and comprehensive knowledge in this field, accompanying students 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.





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*The best specialists in this sector will give you first-hand experience of the reality of this field of work"*

## International Guest Director

With an exceptional professional career, Sarah Carson has focused her research on environmental compliance and sustainability in higher education. For more than 3 decades, she has been part of Cornell University's research team charged with implementing and analyzing the impact of policies for the care of natural resources. Thanks to her experience in this area of expertise, she has been chosen to lead the Office of Campus Sustainability at Cornell University.

In this way, this expert directs the electricity supply projects, aimed at reducing the carbon footprint of the higher education center. As such, she has implemented innovative technologies that help, for example, to maintain high temperatures during the winter in the educational facilities. Specifically, her team has opted to implement a renewable geothermal heat source called "ground-source heat", the beneficial results of which have already been reported in several global impact reports.

At the same time, she has actively participated in the energy policy of New York, related to the generation of renewable energy. To this end, she has collaborated in the volunteer program for the Regional Greenhouse Gas Initiative in this US state. The latter is based on the Cap and Trade model, which allows the university, the local government and other participants to claim renewable energy credits.

As for her academic life, Carson holds a degree in Natural Resources Management and Policy from North Carolina State University. She also holds a degree in Environmental Science and Policy from the School of Environmental Science and Forestry at the State University of New York.



## Ms. Carson, Sarah

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- Director, Office of Sustainability, Cornell University, New York, United States
- Head of Campus Climate Action, Cornell University, New York, USA
- Environmental Management Specialist, Cornell University
- Environmental Information Officer, Cornell University
- B.S. in Natural Resource Management and Policy from North Carolina State University
- B.S. in Environmental Science and Policy from the State University of New York

“

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

## 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.)

03

# Structure and Content

The syllabus of this Postgraduate Diploma includes all the contents required to achieve a broad and up-to-date knowledge of energy management tools and the suitability of their application. A program specifically created to provide our students with a continuous process of skills improvement that will boost their real capacity for intervention.



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*An intensive journey through all the areas of knowledge you need to become an expert in this field"*

## Module 1. Energy management tools

- 1.1. Energy Regulatory Framework
  - 1.1.1. European Energy Efficiency Directive
  - 1.1.2. Transpositions of the Directive to the National Market
  - 1.1.3. Main Energy Regulations
- 1.2. Regulatory Inspections
  - 1.2.1. Air Conditioning Inspections
  - 1.2.2. High/Low Voltage Inspections
  - 1.2.3. Other Regulatory Inspections
- 1.3. Energy Audits
  - 1.3.1. Conducting an Energy Audit Identification of Improvement Opportunities
  - 1.3.2. UNE EN 16247-1: 2012
  - 1.3.3. Royal Decree 56/2016
- 1.4. Energy Simulation tools
  - 1.4.1. Light Simulations
  - 1.4.2. Air Conditioning Simulations
  - 1.4.3. Building Energy Demand Simulations
- 1.5. Supply Management: Monitoring
  - 1.5.1. Types of Monitoring
  - 1.5.2. Energy Management Platforms
  - 1.5.3. Fundamental Equipment
- 1.6. Energy Services
  - 1.6.1. Energy Services
  - 1.6.2. Energy Services Companies
  - 1.6.3. Types of Contracts
- 1.7. IPMVP
  - 1.7.1. Calculating Savings Avoided Cost and Standardized Savings Models
  - 1.7.2. Options A, B, C and D
  - 1.7.3. Establishing Baselines

- 1.8. Energy Efficiency Master Plans
  - 1.8.1. Methodology for Preparing a Master Plan
  - 1.8.2. Management Models
  - 1.8.3. Energy Efficiency within a Master Plan
- 1.9. Asset Management
  - 1.9.1. What is Asset Management?
  - 1.9.2. ISO 55001 Asset Management
  - 1.9.3. Benefits of Implementing Asset Management
- 1.10. Grants and Subsidies
  - 1.10.1. European Grants and Subsidies
  - 1.10.2. National Grants and Subsidies
  - 1.10.3. Regional Grants and Subsidies

## Module 2. Energy sources

- 2.1. Fossil Fuels
  - 2.1.1. Coal
  - 2.1.2. Natural Gas
  - 2.1.3. Oil
- 2.2. Electricity
  - 2.2.1. Electricity
  - 2.2.2. Electricity Generation
  - 2.2.3. Uses of Electricity
- 2.3. Nuclear Energy
  - 2.3.1. Nuclear Energy
  - 2.3.2. Nuclear Power Plants
  - 2.3.3. Environmental Opportunities
  - 2.3.4. Environmental Risks
  - 2.3.5. Nuclear Waste Treatment



- 2.4. Solar Energy
  - 2.4.1. Electricity Generation
  - 2.4.2. Thermal Generation
  - 2.4.3. Solar Power Plants
  - 2.4.4. Risks and Opportunities
- 2.5. Wind Energy
  - 2.5.1. Wind Farms
  - 2.5.2. Advantages and Disadvantages.
  - 2.5.3. Microgeneration
- 2.6. Biomass
  - 2.6.1. Thermochemical and Biochemical Methods
  - 2.6.2. The Biomass Market
  - 2.6.3. Advantages and Disadvantages.
- 2.7. Geothermal Energy
  - 2.7.1. Geothermal Deposits
  - 2.7.2. Electricity Generation
  - 2.7.3. Advantages and Disadvantages.
- 2.8. Other Renewable Energies
  - 2.8.1. Hydraulic Energy
  - 2.8.2. Tidal Energy
  - 2.8.3. Wave Energy
- 2.9. Energy Sources in Development
  - 2.9.1. Green Hydrogen
  - 2.9.2. Tidal Energy
  - 2.9.3. Biogas and Biomethane
- 2.10. Energy Sources for Mobility
  - 2.10.1. Electric Vehicles
  - 2.10.2. CNG Vehicles
  - 2.10.3. Other Alternatives for Sustainable Mobility

### Module 3. Electrical Energy

- 3.1. Electrical Energy Voltage, Current, Power and Energy
  - 3.1.1. Voltage and Current
  - 3.1.2. Active, Reactive and Apparent Energy
  - 3.1.3. Electrical Power. Load Curves
- 3.2. Energy Transformation
  - 3.2.1. Power Transformers
  - 3.2.2. Electricity Transportation
  - 3.2.3. Electricity Distribution
- 3.3. Electrical Energy Consuming Systems: Electric Engines
  - 3.3.1. Applications, Pumps, Fans and Compressors
  - 3.3.2. Frequency Inverters
  - 3.3.3. Motor-Based Consumer Systems: Heat Pump Air Conditioning
- 3.4. Other Electricity Consuming Systems
  - 3.4.1. Joule Effect
  - 3.4.2. Lighting
  - 3.4.3. Direct Current Powered Systems
- 3.5. Electricity Billing
  - 3.5.1. Legislation
  - 3.5.2. Electricity Rates
  - 3.5.3. Electricity Billing Term
- 3.6. Units of Measurement of Fuel Consumption and their Transformation into Energy Units
  - 3.6.1. Energy Produced by Heat of Combustion: HHV and LLV
  - 3.6.2. Volumetric Measurements of Combustible Liquids
  - 3.6.3. Volumetric Measurements of Combustible Gases. Establishment and Calculation of Normal Conditions
- 3.7. Combustion Systems and Fuel Elements
  - 3.7.1. Combustion Efficiency
  - 3.7.2. Burners
  - 3.7.3. Heat Transfer
- 3.8. Boilers
  - 3.8.1. Calculation of Boiler Efficiency by Direct and Indirect Method
  - 3.8.2. Types of Heat Transfer Fluids
  - 3.8.3. Steam Boilers
- 3.9. Other Fuel-Consuming Equipment
  - 3.9.1. Ovens
  - 3.9.2. Engines
  - 3.9.3. Generating Sets
- 3.10. Fuel Billing
  - 3.10.1. Legislation
  - 3.10.2. Natural Gas Rates
  - 3.10.3. Natural Gas Billing Terms



*Advance your skills with the most interesting study systems on the online teaching scene"*

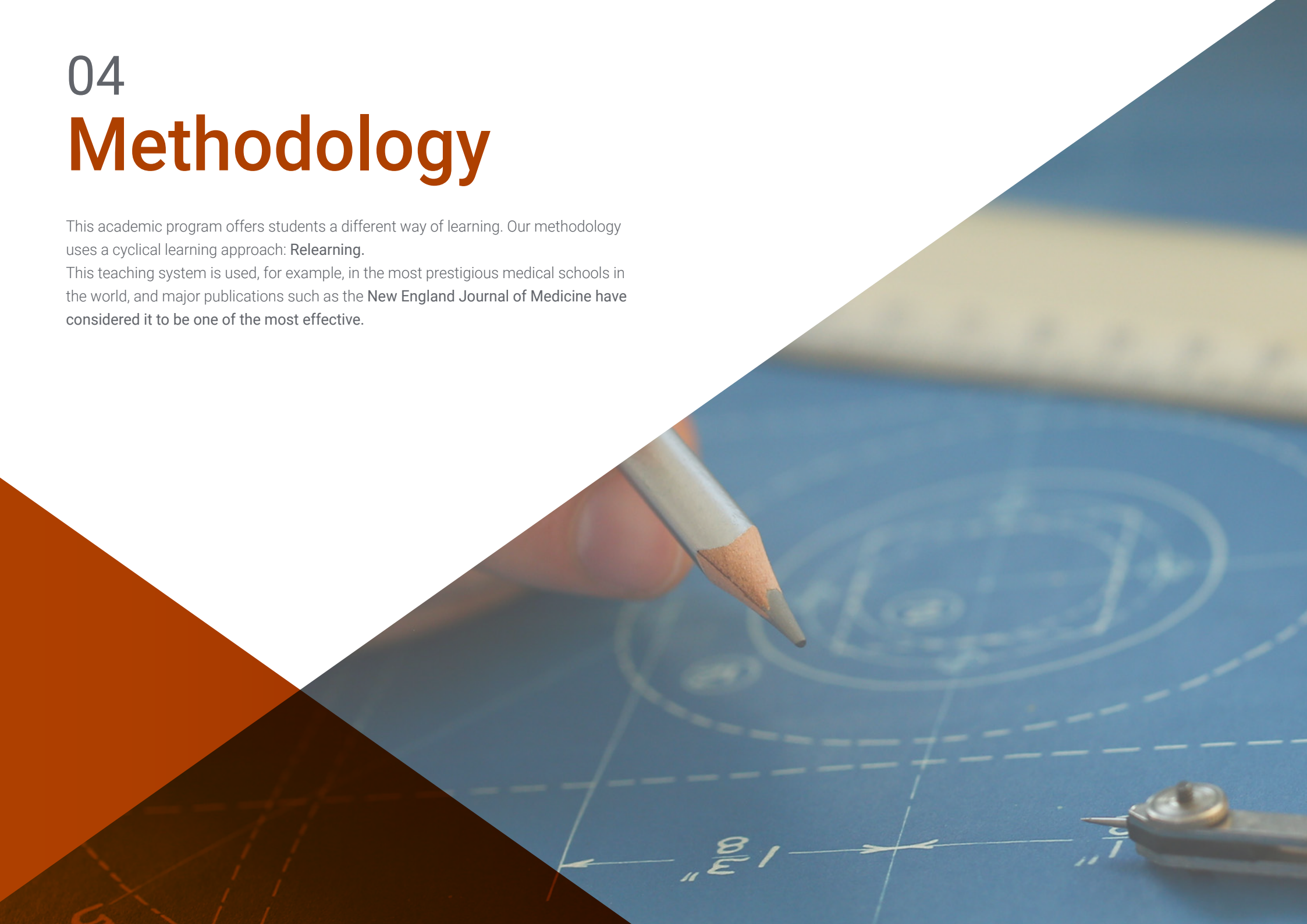


04

# 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"*

## 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.

“

*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.*



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

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

This intensive Engineering program at TECH Global 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 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.



*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 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.



05

# Certificate

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





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

This program will allow you to obtain your **Postgraduate Diploma in Environmental and Energy Management in Organizations** 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 Environmental and Energy Management in Organizations**

Modality: **online**

Duration: **6 months**

Accreditation: **18 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

virtual classroom

**tech** global  
university

## Postgraduate Diploma

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Tools in Organizations

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