

# Postgraduate Diploma

Biomass, Biofuels and other Emerging  
Renewable Energy Sources





## Postgraduate Diploma

### Biomass, Biofuels and other Emerging Renewable Energy Sources

Course Modality: **Online**

Duration: **6 months.**

Certificate: **TECH Technological University**

Official N° of Hours: **450 h.**

Website: [www.techtute.com/engineering/postgraduate-diploma/postgraduate-diploma-biomass-biofuels-emerging-renewable-energy-sources](http://www.techtute.com/engineering/postgraduate-diploma/postgraduate-diploma-biomass-biofuels-emerging-renewable-energy-sources)

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# 01

# Introduction

Renewable Energies are undoubtedly on the rise and this market increasingly requires specialized professionals who know how to manage them and choose those that are best in each case. Aware of this, TECH's professionals have designed this very complete program whose main objective is to provide all the necessary specialization related to the use, exploitation, procurement, conversion and logistics of energy from Biomass. This training also aims to specialize the engineer in the implementation model of this type of energy, as well as in the ways of converting biomass into liquid and/or gaseous biofuels. This knowledge will allow the professional to take part in projects of high importance, revaluing their professional profile.





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*Knowledge of alternative renewable energy sources is a skill that is in high demand by companies internationally.”*

The renewable energy sector is in full international expansion and is increasingly demanding engineers specialized in this field. Therefore, the best professionals in the sector have designed for TECH this complete Postgraduate Diploma that aims to train professionals with high knowledge in everything that encompasses the renewable energy sector, specifically in Biomass and Biofuels, to increase their working position in today's energy market.

Specifically, the objective of this Postgraduate Diploma is to provide the engineer with all the necessary specialization related to the use, exploitation, obtaining, conversion and logistics of energy from Biomass in a solid state as well as its possible valuations when converting this Biomass into a liquid and/or gaseous Biofuels.

The current situation and future forecasts of the biomass and/or biofuels sectors in the European context and the advantages and disadvantages of this type of renewable energy will also be analyzed. In addition, we will study in depth the systems of biomass energy use and biomass resources, differentiating the types of energy production that exist today, their advantages and disadvantages.

Finally, the student will analyze the processes for obtaining both biodiesel and bioethanol and/or biomethanol, while carrying out an exhaustive review of the information and keeping up to date with legislation and regulations related to biomass and biofuels.

For all these reasons, this Postgraduate Diploma in Biomass, Biofuels and other Emerging Renewable Energy Sources integrates the most complete and innovative educational program in the current market in terms of knowledge and latest available technologies, as well as encompassing all the sectors or parties involved in this field. Likewise, the Postgraduate Diploma is made up of exercises based on real cases of situations currently managed or previously faced by the teaching team.

This **Postgraduate Diploma in Biomass, Biofuels and other Emerging Renewable Energy Sources** 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 experts in Renewable Energies.
- ◆ 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



*Biomass and biofuels make up a large part of the future renewable energy landscape. Get to know all its ins and outs with this very complete specialization".*

“

*TECH puts in your hands the most competitive and complete didactic material in the sector. That way, you'll be sure to learn with the best information."*

The program's teaching staff includes professionals from the sector who bring the experience of their work to this specialization, in addition to renowned specialists from reference 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 training programmed to train in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced engineering experts.

*A 100% online specialization that will allow you to combine your studies with the rest of your daily activities"*

*A very complete training, created with a total quality objective focused on bringing our students to the highest level of competence"*



# 02

# Objectives

TECH has designed this complete Postgraduate Diploma with the aim of training engineering professionals to be able to design, implement and work in Biomass projects and other alternative renewable energy sources, knowing in depth everything related to this industry and the aspects of sustainability and climate change in the international arena that directly affect it. To this end, specific aspects of energy systems will be addressed, which are of enormous importance in today's business landscape, and for which large corporations are increasingly demanding competent engineers with a solid specialized Preparation.







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*TECH's goal is clear: to help you grow in your profession and become a prestigious engineer”*



## General Objectives

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- ◆ Conduct an exhaustive analysis of current legislation and the energy system, from electricity generation to the consumption phase, as well as the fundamental production factor in the economic system and the functioning of the different energy markets
- ◆ Identify the different phases required for the feasibility and implementation of a Renewable Energy project and its commissioning
- ◆ Analyze in depth the different technologies and manufacturers available to create renewable energy exploitation systems, and distinguish and critically select those qualities based on costs and their actual application.
- ◆ Identify the operation and maintenance tasks required for the correct operation of Renewable Energy installations
- ◆ Size facilities for the application of all energy sources of lesser implementation such as mini-hydro, geothermal, tidal and clean vectors
- ◆ Manage and analyze relevant bibliography on a topic related to one or some of the fields of Renewable Energies, published both nationally and internationally
- ◆ Adequately interpret society's expectations on the environment and climate change, and engage in technical discussions and critical opinions on energy aspects of sustainable development, as skills that Renewable Energy professionals should have
- ◆ Integrate knowledge and face the complexity of formulating reasoned judgments in the field applicable to a company in the Renewable Energy sector
- ◆ Master the different existing solutions or methodologies for the same problem or phenomenon related to Renewable Energies and develop a critical spirit knowing the practical limitations



## Specific Objectives

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### Module 1. Renewable Energies and Their Current Environment

- ◆ Explore in depth the world energy and environmental situation, as well as that of other countries.
- ◆ Gain detailed knowledge of the current energy and electricity context from different perspectives: structure of the electricity system, operation of the electricity market, regulatory environment, analysis and evolution of the electricity generation system in the short and medium and long term
- ◆ Master the technical-economic criteria of generation systems based on the use of conventional energy: nuclear energy, large hydro, conventional thermal, combined cycle and the current regulatory environment of both conventional and renewable generation systems and their dynamics of evolution
- ◆ Apply the knowledge acquired to the understanding, conceptualization and modeling of systems and processes in the field of energy technology, particularly in the field of renewable energy sources
- ◆ Effectively pose and solve practical problems, identifying and defining the significant elements that constitute them
- ◆ Critically analyze data and reach conclusions in the field of energy technology
- ◆ Use the acquired knowledge to conceptualize models, systems and processes in the field of energy technology
- ◆ Analyze the potential of Renewable Energies and energy efficiency from multiple perspectives: technical, regulatory, economic and market
- ◆ Carry out operations in the Spanish electricity system market
- ◆ Gain the ability to search for information on public websites related to the electricity system and to elaborate this information

## Module 2. Biomass and Biofuel Energy Systems

- ◆ Detailed knowledge of the current situation and future forecasts of the biomass and/or biofuels sectors in the local, provincial, state and European context
- ◆ Quantify the advantages and disadvantages of this type of Renewable Energy
- ◆ Delve into biomass energy utilization systems, i.e., the ways in which energy can be obtained from biomass
- ◆ Assess the biomass resources available in a given area, called the study area
- ◆ Differentiate the types of energy crops that exist today, their advantages and disadvantages
- ◆ Typify the biofuels used today Understand the processes for obtaining both biodiesel and bioethanol and/or biomethanol
- ◆ Conduct comprehensive analyses of legislation and regulations related to biomass and biofuels
- ◆ Ability to carry out an economic analysis and have a detailed knowledge of the legislative and economic frameworks in the biofuels sector.

## Module 3. Other Emerging Renewable Energies and Hydrogen as an Energy Vector

- ◆ Master the different technologies to use sea energies
- ◆ Gain in-depth knowledge and apply geothermal energy
- ◆ Associate the physicochemical properties of hydrogen with its potential use as an energy carrier
- ◆ Learn about the use of hydrogen as a renewable energy source
- ◆ Identify the most commonly used fuel cells and accumulators to date, highlighting the technological improvements throughout history
- ◆ Characterize the different types of fuel cells
- ◆ Delve into recent advances in the use of new materials for the manufacture of fuel cells and their most innovative applications
- ◆ Classify ATEX zones with hydrogen as fuel



*TECH puts in your hand a compendium of practical cases that will be your main asset when facing real situations"*

03

# Course Management

TECH applies a criterion based on high quality in all its training. This guarantees students that by studying here they will find the best didactic content taught by the best professionals in the sector. In this sense, this Postgraduate Diploma in Biomass, Biofuels and other Emerging Renewable Energy Sources has highly prestigious professionals in this area, who pour into the specialization the experience of their years of work, as well as the knowledge acquired from research in the field. All to provide the engineer with a high-level program, which will enable them to practice in national and international environments with greater guarantees of success.





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*TECH provides you with the expertise of the most reputable professionals in the industry so that you can be sure to learn from the best.”*

## Guest Director



### Mr. De la Cruz Torres, José

- ◆ Degree in Physics and Industrial Electronics Engineering, University of Seville
- ◆ Master's Degree in Operations Management by EADA Business School Barcelona
- ◆ Master's Degree in Industrial Maintenance Engineering, University of Huelva, Spain
- ◆ Railway Engineering, UNED
- ◆ South head of the appraisal, assessment and valuation of technologies and processes of Renewable Energy generation facilities at RTS International Loss Adjusters

## Co-Direction



### Lillo Moreno, Javier

- ◆ Telecommunications Engineer, University of Seville
- ◆ Master's Degree in Project Management and Master's Degree in Big Data & Business Analytics, School of Industrial Organization (EOI)
- ◆ With an extensive professional career in the Renewable Energy sector of more than 15 years
- ◆ Has managed the O&M areas of several companies with high visibility in the sector



## Professors

### Mr. Silvan Zafra, Álvaro

- ◆ Energy Engineer, University of Seville
- ◆ Master in Thermal Energy Systems and Business Administration
- ◆ Senior Consultant focused on the execution of international E2E projects in the energy sector
- ◆ Responsible for the market management of more than 15 GW of installed capacity for clients such as Endesa, Naturgy, Iberdrola, Acciona and Engie

### Trillo León, Eugenio

- ◆ Industrial Engineer specialized in Energy from the University of Seville.
- ◆ Master's Degree in Industrial Maintenance Engineering, University of Huelva, Spain
- ◆ Postgraduate Diploma in Project Management by the University of California - Los Angeles
- ◆ CEO of The Lean Hydrogen Company
- ◆ Secretary of the Andalusian Hydrogen Association

### Dr. De la Cal Herrera, José Antonio

- ◆ Industrial Engineer, Universidad Politécnica de Madrid.
- ◆ MBA in Business Administration and Management from the Business School of Commercial and Marketing Management, ESIC
- ◆ Doctor from the University of Jaén
- ◆ Former Head of the Renewable Energy Department of AGECAM, S.A., Energy Management Agency of Castilla-La Mancha
- ◆ Associate Professor of the Department of Business Organization of the University of Jaén.

# 04

# Structure and Content

The syllabus of the Postgraduate Diploma is configured as a complete tour through each and every one of the contents necessary to understand and assume the ways of working in this field. Thus, through a novel didactic approach, based on the practical application of the contents, the engineer will learn and understand the functioning of Biomass and Biofuels, knowing how to design and implement projects in this sense, providing high levels of safety and services to companies. This, in addition to adding value to your professional profile, will make you a much better prepared professional to work in a variety of environments.





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*The TECH contents have been designed based on the most effective and innovative teaching methodology in the sector”*

## Module 1. Renewable Energies and Their Current Environment

- 1.1. Renewable Energies
  - 1.1.1. Fundamental Principles
  - 1.1.2. Conventional Energy Forms vs. Renewable Energy
  - 1.1.3. Advantages and Disadvantages of Renewable Energies
- 1.2. International Context of Renewable Energies
  - 1.2.1. Basics of Climate Change and Energy Sustainability Renewable Energies vs. Non-Renewable Energies
  - 1.2.2. Decarbonization of the World Economy. From the Kyoto Protocol to the Paris Agreement in 2015 and the 2019 Madrid Climate Summit
  - 1.2.3. Renewable Energies in the Global Energy Context
- 1.3. Energy and International Sustainable Development
  - 1.3.1. Carbon Markets
  - 1.3.2. Clean Energy Certificates
  - 1.3.3. Energy vs. Sustainability
- 1.4. General Regulatory Framework
  - 1.4.1. International Energy Regulation and Directives
  - 1.4.2. Legal, Legislative and Regulatory Framework of the Energy Sector and Energy Efficiency at the National (Spain) and European Level
  - 1.4.3. Auctions in the Renewable Electricity Sector
- 1.5. Electricity Markets
  - 1.5.1. System Operation with Renewable Energies
  - 1.5.2. Regulation of Renewable Energies
  - 1.5.3. Participation of Renewable Energies in the Electricity Markets
  - 1.5.4. Operators in the Electricity Market
- 1.6. Structure of the Electrical System
  - 1.6.1. Generation of the Electrical System
  - 1.6.2. Transmission of the Electrical System
  - 1.6.3. Distribution and Operation of the Market
  - 1.6.4. Marketing





- 1.7. Distributed Generation
  - 1.7.1. Concentrated Generation vs. Distributed Generation
  - 1.7.2. Self-Consumption
  - 1.7.3. Generation Contracts
- 1.8. Emitters
  - 1.8.1. Measuring Energy
  - 1.8.2. Greenhouse Gases in Power Generation and Use
  - 1.8.3. Emission Assessment by Type of Energy Generation
- 1.9. Energy Storage
  - 1.9.1. Types of Cells
  - 1.9.2. Advantages and Disadvantages of Cells
  - 1.9.3. Other Energy Storage Technologies
- 1.10. Main Technologies
  - 1.10.1. Energies of the Future
  - 1.10.2. New Uses
  - 1.10.3. Future Energy Contexts and Models

## Module 2. Biomass and Biofuel Energy Systems

- 2.1. Biomass as an Energy Resource of Renewable Origin
  - 2.1.1. Fundamental Principles
  - 2.1.2. Origins, Typologies and Current Uses
  - 2.1.3. Main Physicochemical Parameters
  - 2.1.4. Products Obtained
  - 2.1.5. Quality Standards for Solid Biofuels
  - 2.1.6. Advantages and Disadvantages of the Use of Biomass in Buildings
- 2.2. Physical Conversion Processes. Pre-Treatments
  - 2.2.1. Justification
  - 2.2.2. Types of Processes
  - 2.2.3. Cost and Profitability Analysis

- 2.3. Main Chemical Conversion Processes of Residual Biomass. Products and Uses
  - 2.3.1. Thermochemicals
  - 2.3.2. Biochemicals
  - 2.3.3. Other Processes
  - 2.3.4. Analysis of Investment Profitability
- 2.4. Gasification Technology: Technical and Economic Aspects. Advantages and Disadvantages
  - 2.4.1. Scope of Application
  - 2.4.2. Biomass Requirements
  - 2.4.3. Types of Gasifiers
  - 2.4.4. Properties of *Syngas*
  - 2.4.5. *Syngas* Applications
  - 2.4.6. Existing Technologies at Commercial Level
  - 2.4.7. Profitability Analysis
  - 2.4.8. Advantages and Disadvantages
- 2.5. Pyrolysis. Products Obtained and Costs. Advantages and Disadvantages
  - 2.5.1. Scope of Application
  - 2.5.2. Biomass Requirements
  - 2.5.3. Types of Paralysis
  - 2.5.4. Resulting Products
  - 2.5.5. Cost Analysis (CAPEX and OPEX). Economic Profitability
  - 2.5.6. Advantages and Disadvantages
- 2.6. Biomethanization
  - 2.6.1. Scope of Application
  - 2.6.2. Biomass Requirements
  - 2.6.3. Main Technologies. Co-Digestion
  - 2.6.4. Products Obtained
  - 2.6.5. Uses of Biogas
  - 2.6.6. Cost Analysis. Study of Investment Profitability
- 2.7. Design and Evolution of Biomass Energy Systems
  - 2.7.1. Sizing of a Biomass Combustion Plant for Electric Power Generation
  - 2.7.2. Biomass Installation in a Public Building. Sizing and Calculating the Storage System. Determination of PayBback in Case of Substitution for Fossil Fuels (Natural Gas and Diesel Oil C)
  - 2.7.3. Calculation an Industrial Biogas Production System
  - 2.7.4. Assessment of Biogas Production at a MSW Landfill Site
- 2.8. Designing Business Models Based on the Technologies Studied
  - 2.8.1. Gasification in Self-Consumption Mode Applied to the Agri-Food Industry
  - 2.8.2. Biomass Combustion Using the ESE Model Applied to the Industrial Sector
  - 2.8.3. Obtaining Biochar From By-Products of the Olive Oil Sector
  - 2.8.4. Production of Green H2 From Biomass
  - 2.8.5. Obtaining Biogas From By-Products of the Olive Oil Industry
- 2.9. Analyzing the Profitability of a Biomass Project. Applicable Legislation, Incentives and Financing
  - 2.9.1. Structure of an Investment Project: CAPEX, OPEX, Income/Savings, TIR, VAN and Pay-Back,
  - 2.9.2. Aspects to be Taken Into Account: Electrical Infrastructure, Access, Space Availability, etc.
  - 2.9.3. Applicable Legislation
  - 2.9.4. Administrative Procedures. Plan
  - 2.9.5. Incentives and Financing
- 2.10. Conclusions. Environmental, Social and Energy Aspects Associated with Biomass
  - 2.10.1. Bioeconomy and Circular Economy
  - 2.10.2. Sustainability. CO2 Emissions Avoided. C Sinks
  - 2.10.3. Alignment With UN SDGs and Green Pact Goals
  - 2.10.4. Employment Generated by Bioenergy. Value Chain
  - 2.10.5. Contribution of Bioenergy to the Energy Mix
  - 2.10.6. Productive Diversification and Rural Development

### Module 3. Other Emerging Renewable Energies and Hydrogen as an Energy Vector

- 3.1. Current Situation and Outlook
  - 3.1.1. Applicable Legislation
  - 3.1.2. Current Situation and Future Models
  - 3.1.3. Incentives and Financing R&D&I
- 3.2. Energies of Marine Origin I: Tidal
  - 3.2.1. Tidal Energy Origin and Potential
  - 3.2.2. Technologies for Harnessing Tidal Energy
  - 3.2.3. Costs and Environmental Impact of Tidal Energy
- 3.3. Energies of Marine Origin II: Undimotor
  - 3.3.1. Wave Energy Origin and Potential
  - 3.3.2. Technologies for Harnessing Wave Energy
  - 3.3.3. Costs and Environmental Impact of Wave Energy
- 3.4. Energies of Marine Origin III: Maremothermal
  - 3.4.1. Origin and Potential of Tidal Energy
  - 3.4.2. Technologies for Harnessing Tidal Energy
  - 3.4.3. Costs and Environmental Impact of Tidal Energy
- 3.5. Geothermal Energy
  - 3.5.1. Potential of Geothermal Energy
  - 3.5.2. Technologies for Harnessing Geothermal Energy
  - 3.5.3. Costs and Environmental Impact of Tidal Energy
- 3.6. Applications of the Studied Technologies
  - 3.6.1. Applications
  - 3.6.2. Cost and Profitability Analysis
  - 3.6.3. Productive Diversification and Rural Development
  - 3.6.4. Advantages and Disadvantages
- 3.7. Hydrogen as an Energy Carrier
  - 3.7.1. Adsorption Process
  - 3.7.2. Heterogeneous Catalysis
  - 3.7.3. Hydrogen as an Energy Carrier
- 3.8. Hydrogen Generation and Integration in Renewable Energy Systems. "Green Hydrogen"
  - 3.8.1. Hydrogen Production
  - 3.8.2. Hydrogen Storage and Distribution
  - 3.8.3. Use and Applications of Hydrogen
- 3.9. Fuel Cells and Electric Vehicles
  - 3.9.1. Fuel Cell Operation
  - 3.9.2. Types of Fuel Cells
  - 3.9.3. Applications: Portable, Stationary or Transport Applications
  - 3.9.4. Electric Vehicles, Drones, Submarines, etc.
- 3.10. Safety and ATEX Regulations
  - 3.10.1. Current Legislation
  - 3.10.2. Ignition Sources
  - 3.10.3. Risk Assessment
  - 3.10.4. Classificaion of ATEX Zones
  - 3.10.5. Work Equipment and Tools to be Used in ATEX Zones



*A unique learning opportunity that will catapult your career to the next level  
Don't let it slip away"*

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.

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*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.*





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

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.



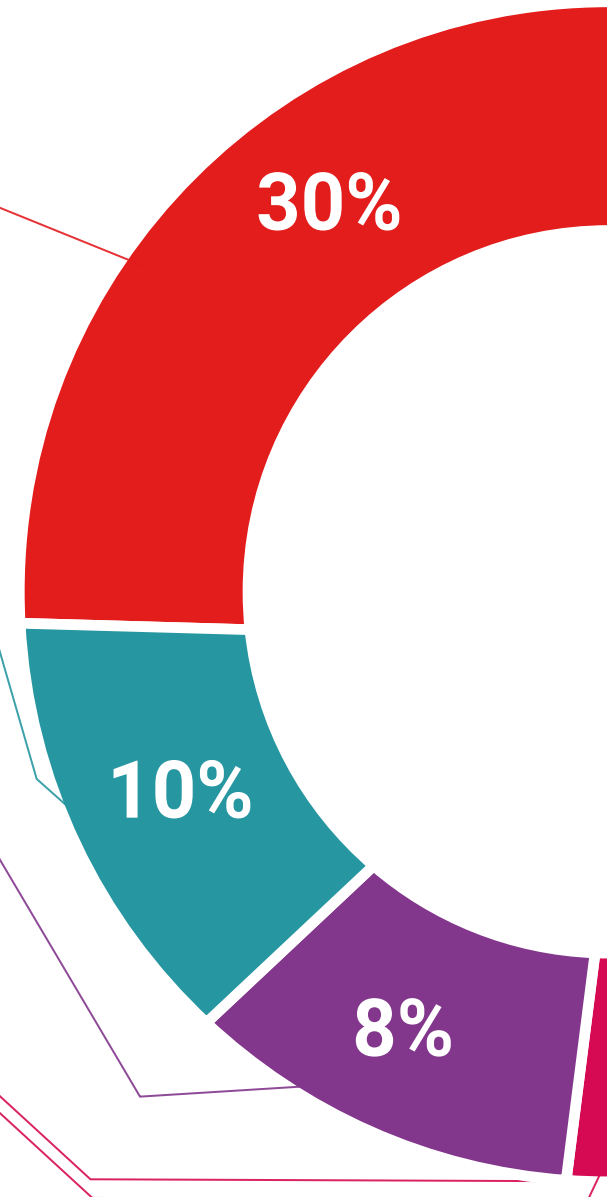
### Practising Skills and Abilities

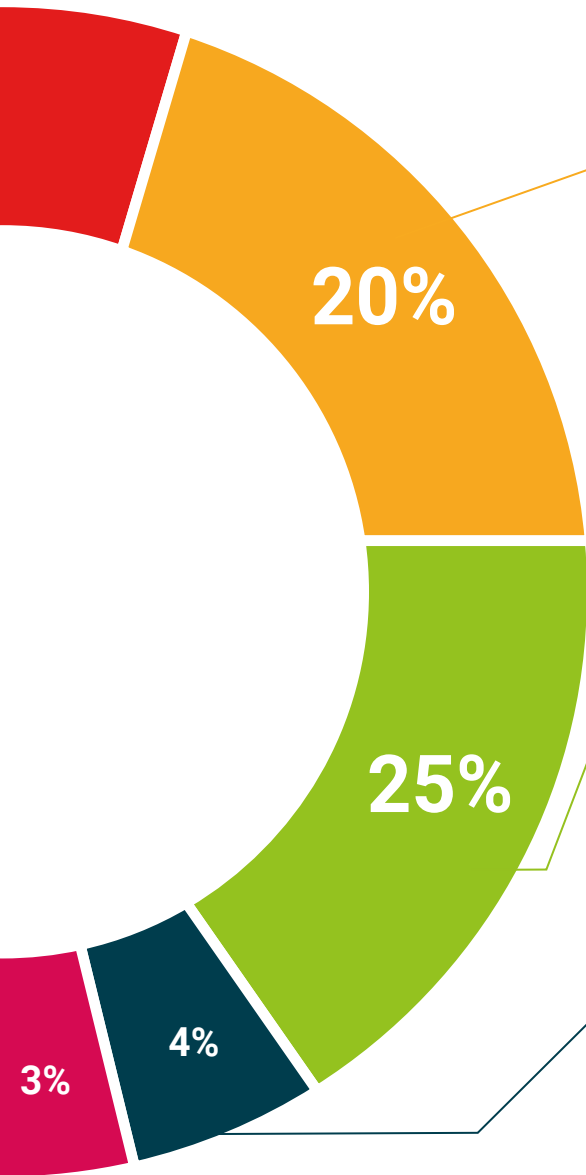
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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 Diploma in Biomass, Biofuels and other Emerging Renewable Energy Sources guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.



“

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

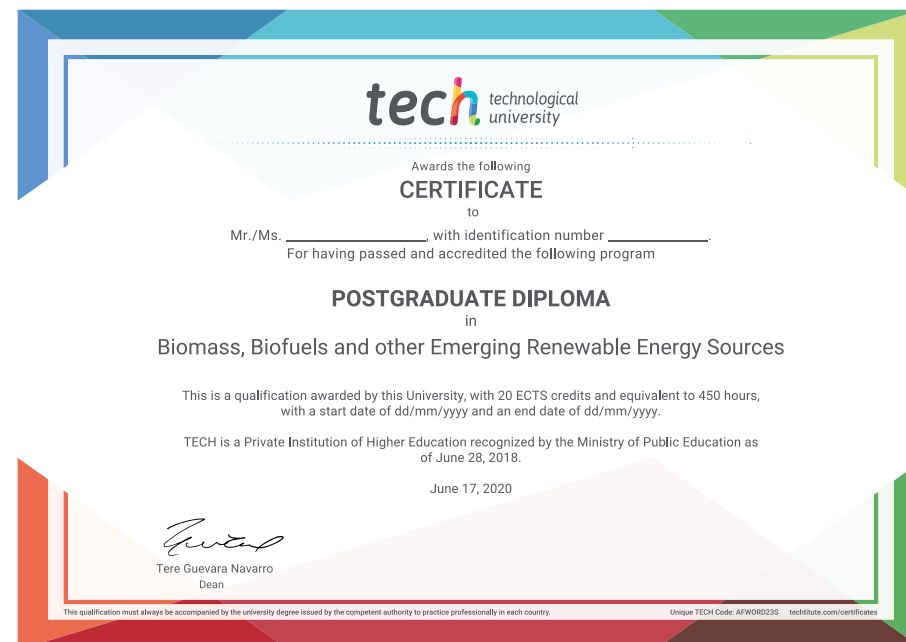
This **Postgraduate Certificate in Biomass, Biofuels and other Emerging Renewable Energy Sources** contains the most complete and up-to-date educational program on the market.

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

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

Title: **Postgraduate Certificate in Biomass, Biofuels and other Emerging Renewable Energy Sources**

Official N° of Hours: **450 h.**



\*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

online training

development language

virtual classroom

**tech** technological  
university

**Postgraduate Diploma  
Biomass, Biofuels  
and other Emerging  
Renewable Energy  
Sources**

Course Modality: Online

Duration: 6 months.

Certificate: TECH Technological University

Official N° of Hours: 450 h.

# Postgraduate Diploma

Biomass, Biofuels and other Emerging  
Renewable Energy Sources

