

# Postgraduate Diploma

Biomass, Biofuels, and Other Emerging  
Renewable Energy Sources



## Postgraduate Diploma Biomass, Biofuels, and Other Emerging Renewable Energy Sources

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

Website: [www.techtitude.com/us/engineering/postgraduate-diploma/postgraduate-diploma-biomass-biofuels-emerging-renewable-energy-sources](http://www.techtitude.com/us/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 a thorough analysis of the current legislation and the energy system, from electricity generation to consumption, as well as its role as a fundamental production factor in the economic system and the operation of different energy markets
- ◆ Identify the different stages necessary for the viability and implementation of a renewable energy project and its commissioning
- ◆ Perform an in-depth analysis of the different technologies and manufacturers available for creating renewable energy exploitation systems, and critically distinguish and select the best options based on costs and real-world application
- ◆ Identify the operational and maintenance tasks required to ensure the proper functioning of renewable energy installations
- ◆ Carry out the sizing of installations for the application of lesser-implemented energies, such as mini-hydraulic, geothermal, tidal, and clean energy vectors
- ◆ Handle and analyze relevant literature on topics related to renewable energy fields, published globally
- ◆ Appropriately interpret societal expectations regarding the environment and climate change, and engage in technical discussions and critical opinions on energy aspects of sustainable development as competencies that renewable energy professionals must possess
- ◆ Integrate knowledge and face the complexity of making reasoned judgments in the applicable field of renewable energy companies
- ◆ Master the various solutions or methodologies available to address the same issue or phenomenon related to renewable energies and develop a critical mindset by understanding practical limitations



## Specific Objectives

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### Module 1. Renewable Energy and Its Current Landscape

- ◆ Deepen the understanding of the global energy and environmental situation, as well as the situation in other countries
- ◆ Gain detailed knowledge of the current energy and electricity context from different perspectives: the structure of the electricity system, the functioning of the electricity market, the regulatory environment, and the analysis and evolution of the electricity generation system in the short, medium, and long term
- ◆ Master the technical-economic criteria of generation systems based on the use of conventional energy sources: nuclear energy, large hydroelectric plants, conventional thermal power plants, combined cycle, and the current regulatory framework of both conventional and renewable generation systems, as well as their dynamic evolution
- ◆ Apply acquired knowledge to understand, conceptualize, and model systems and processes in the field of energy technology, particularly within the area of renewable energy sources
- ◆ Effectively identify and solve practical problems by recognizing and defining the key elements that constitute them
- ◆ Critically analyze data and draw conclusions in the field of energy technology
- ◆ Use the knowledge gained to conceptualize models, systems, and processes within the energy technology field
- ◆ Analyze the potential of renewable energy and energy efficiency from multiple perspectives: technical, regulatory, economic, and market-related
- ◆ Be able to search for information on public websites related to the electricity system and compile this information effectively

## Module 2. Biomass Energy Systems and Biofuels

- ♦ Gain a detailed understanding of the current situation and future projections of the biomass and/or biofuels sectors at the European levels
- ♦ Quantify the advantages and disadvantages of this type of renewable energy
- ♦ Deepen knowledge in biomass energy utilization systems, exploring the various ways energy can be generated from biomass
- ♦ Assess the biomass resources available in a given area, known as the study zone
- ♦ Differentiate the types of energy crops currently used, along with their advantages and disadvantages
- ♦ Classify the biofuels currently in use today Understand the processes involved in the production of biodiesel, bioethanol, and/or biomethanol
- ♦ Conduct a thorough analysis of the legislation and regulations related to biomass and biofuels
- ♦ Carry out an economic analysis and gain in-depth knowledge of the legislative and economic frameworks in the biofuels sector

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

- ♦ Master the different technologies for harnessing marine energies
- ♦ Understand in detail and apply geothermal energy
- ♦ Associate the physicochemical properties of hydrogen with its potential use as an energy carrier
- ♦ Utilize hydrogen as a renewable energy source
- ♦ Identify the most commonly used fuel cells and accumulators to date, highlighting 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 when hydrogen is used as a 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.”*

## International Guest Director

Varun Sivaram, Ph.D. is a **physicist, bestselling author** and leading **clean energy technology** expert with a career spanning the corporate, public and academic sectors. In fact, he has served as **Director of Strategy and Innovation at Orsted**, one of the world's leading renewable energy companies with the largest offshore wind power portfolio.

In addition, Dr. Sivaram has served in the U.S. Biden-Harris administration, as Director General for Clean Energy and Innovation, as well as Senior Advisor to Secretary John Kerry, the Special Presidential Climate Envoy to the White House. In this capacity, he was the creator of the First Movers Coalition, a key initiative to foster clean energy innovation globally.

In the academic field, he has directed the Energy and Climate Program at the Council on Foreign Relations. And his influence in the formulation of government policies to support innovation has been remarkable, having advised leaders such as the mayor of Los Angeles and the governor of New York. He has also been recognized as a Young Global Leader by the World Economic Forum.

In addition, Dr. Varun Sivaram has published several influential books, including "Taming the Sun: Innovations to Harness Solar Energy and Power the Planet" and "Energizing America: A Roadmap to Launch a National Energy Innovation Mission", both of which have received accolades from prominent leaders such as Bill Gates. In fact, his contribution to the clean energy field has been recognized internationally, being included in the TIME 100 Next list and incorporated by Forbes in its Forbes 30 Under 30 list in Law and Policy, among other major accolades.



## Dr. Sivaram, Varun

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- ♦ Director of Strategy and Innovation at Ørsted, United States
- ♦ Managing Director, Clean Energy and Innovation // Senior Advisor to Secretary John Kerry, U.S. Special Presidential Climate Envoy at The White House
- ♦ Chief Technology Officer at ReNew Power
- ♦ Strategic Advisor for Energy and Finance on Reforming the Energy Vision at the New York Governor's Office
- ♦ Ph.D. in Condensed Matter Physics from Oxford University
- ♦ B.S. in Engineering Physics and International Relations from Stanford University.
- ♦ Awards: Forbes 30 Under 30, awarded by Forbes magazine  
Grist Top 50 Leaders in Sustainability, awarded by Grist magazine  
MIT TR Top 35 Innovators, awarded by MIT Tech Review Magazine  
TIME 100 Next Most Influential People in the World, awarded by TIME Magazine
- ♦ Young Global Leader, awarded by the World Economic Forum
- ♦ Member of: Atlantic Council ,Breakthrough Institute , Aventurine Partners



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

## 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 Energy and Its Current Landscape

- 1.1. Renewable Energy
  - 1.1.1. Fundamental Principles
  - 1.1.2. Conventional Energy Forms vs. Renewable Energy
  - 1.1.3. Advantages and Disadvantages of Renewable Energy
- 1.2. International Context of Renewable Energies
  - 1.2.1. Fundamentals of Climate Change and Energy Sustainability. Renewable Energies vs. Non-Renewable Energies
  - 1.2.2. Decarbonization of the Global Economy. From the Kyoto Protocol to the Paris Agreement in 2015 and the 2019 Climate Summit in Madrid
  - 1.2.3. Renewable Energy 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. Auctions in the Renewable Electricity Sector
- 1.5. Electricity Markets
  - 1.5.1. Operation of the System with Renewable Energy
  - 1.5.2. Renewable Energy Regulation
  - 1.5.3. Participation of Renewable Energy in Electricity Markets
  - 1.5.4. Operators in the Electricity Market
- 1.6. Electricity System Structure
  - 1.6.1. Electricity Generation
  - 1.6.2. Electricity Transmission
  - 1.6.3. Market Distribution and Operation
  - 1.6.4. Commercialization





- 1.7. Distributed Generation
  - 1.7.1. Concentrated Generation vs. Distributed Generation
  - 1.7.2. Self-Consumption
  - 1.7.3. Generation Contracts
- 1.8. Emissions
  - 1.8.1. Energy Measurement
  - 1.8.2. Greenhouse Gases in Energy Generation and Use
  - 1.8.3. Emission Evaluation by Type of Energy Generation
- 1.9. Energy Storage
  - 1.9.1. Types of Batteries
  - 1.9.2. Advantages and Disadvantages of Batteries
  - 1.9.3. Other Energy Storage Technologies
- 1.10. Main Technologies
  - 1.10.1. Energies of the Future
  - 1.10.2. New Applications
  - 1.10.3. Future Energy Scenarios and Models

## Module 2. Biomass and Biofuel Energy Systems

- 2.1. Biomass as a Renewable Energy Resource
  - 2.1.1. Fundamental Principles
  - 2.1.2. Origins, Types, and Current Uses
  - 2.1.3. Main Physical-Chemical 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 Applications
  - 2.3.1. Thermochemicals
  - 2.3.2. Biochemicals
  - 2.3.3. Other Processes
  - 2.3.4. Investment Profitability Analysis
- 2.4. Gasification Technology: Technical and Economic Aspects Advantages and Disadvantages
  - 2.4.1. Areas of Application
  - 2.4.2. Biomass Requirements
  - 2.4.3. Types of Gasifiers
  - 2.4.4. Syngas Properties
  - 2.4.5. Syngas Applications
  - 2.4.6. Existing Commercial Technologies
  - 2.4.7. Profitability Analysis
  - 2.4.8. Advantages and Disadvantages
- 2.5. Pyrolysis. Products Obtained and Costs. Advantages and Disadvantages
  - 2.5.1. Area of Application
  - 2.5.2. Biomass Requirements
  - 2.5.3. Types of Pyrolysis
  - 2.5.4. Resulting Products
  - 2.5.5. Cost Analysis (CAPEX and OPEX). Economic Profitability
  - 2.5.6. Advantages and Disadvantages
- 2.6. Biomethanation
  - 2.6.1. Areas of Application
  - 2.6.2. Biomass Requirements
  - 2.6.3. Main Technologies. Co-Digestion
  - 2.6.4. Products Obtained
  - 2.6.5. Applications of Biogas
  - 2.6.6. Cost Analysis. Investment Profitability Study
- 2.7. Design and Evolution of Biomass Energy Systems
  - 2.7.1. Sizing of a Biomass Combustion Plant for Electricity Generation
  - 2.7.2. Biomass Installation in a Public Building. Sizing and Calculation of the Storage System. Determining the Payback Period for Substituting Fossil Fuels (Natural Gas and Diesel C)
  - 2.7.3. Designing an Industrial Biogas Production System
  - 2.7.4. Evaluating Biogas Production at a Municipal Solid Waste (MSW) Landfill
- 2.8. Design of Business Models Based on Studied Technologies
  - 2.8.1. Gasification for Self-Consumption Applied to the Agro-Food Industry
  - 2.8.2. Biomass Combustion Using the ESE Model Applied to the Industrial Sector
  - 2.8.3. Production of Biochar from Olive Oil Industry Byproducts
  - 2.8.4. Production of Green H<sub>2</sub> from Biomass
  - 2.8.5. Production of Biogas from Olive Oil Industry Byproducts
- 2.9. Profitability Analysis of a Biomass Project. Applicable Legislation, Incentives and Financing
  - 2.9.1. Structure of an Investment Project: CAPEX, OPEX, Revenues/Savings, IRR, NPV, and Payback
  - 2.9.2. Key Considerations: Electrical Infrastructure, Access, Space Availability, etc
  - 2.9.3. Applicable Legislation
  - 2.9.4. Administrative Procedures. Planning
  - 2.9.5. Incentives and Financing
- 2.10. Conclusions. Environmental, Social, and Energy Aspects of Biomass
  - 2.10.1. Bioeconomy and Circular Economy
  - 2.10.2. Sustainability. CO<sub>2</sub> Emissions Avoided. Carbon Sinks
  - 2.10.3. Alignment with UN SDGs and the Green Deal
  - 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 Carrier

- 3.1. Current Situation and Outlook
  - 3.1.1. Applicable Legislation
  - 3.1.2. Current Situation and Future Models
  - 3.1.3. Incentives and R&D&I Funding
- 3.2. Energies of Marine Origin I: Tidal
  - 3.2.1. Tidal Energy Origin and Potential
  - 3.2.2. Technologies to Harness Tidal Energy
  - 3.2.3. Costs and Environmental Impact of Tidal Energy
- 3.3. Energies of Marine Origin II: Wave Power
  - 3.3.1. Wave Energy Origin and Potential
  - 3.3.2. Technologies to Harness Wave Energy
  - 3.3.3. Costs and Environmental Impact of Wave Energy
- 3.4. Energies of Marine Origin III: Ocean Thermal Energy
  - 3.4.1. Origin and Potential of Ocean Thermal Energy
  - 3.4.2. Technologies to Harness Ocean Thermal Energy
  - 3.4.3. Costs and Environmental Impact of Ocean Thermal 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 Technologies Studied
  - 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. Generation and Integration of Hydrogen 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. Operation of Fuel Cells
  - 3.9.2. Types of Fuel Cells
  - 3.9.3. Applications: Portable, Stationary, and Transportation 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. Classification of ATEX Zones
  - 3.10.5. Work Equipment and Tools to be Used in ATEX Zones



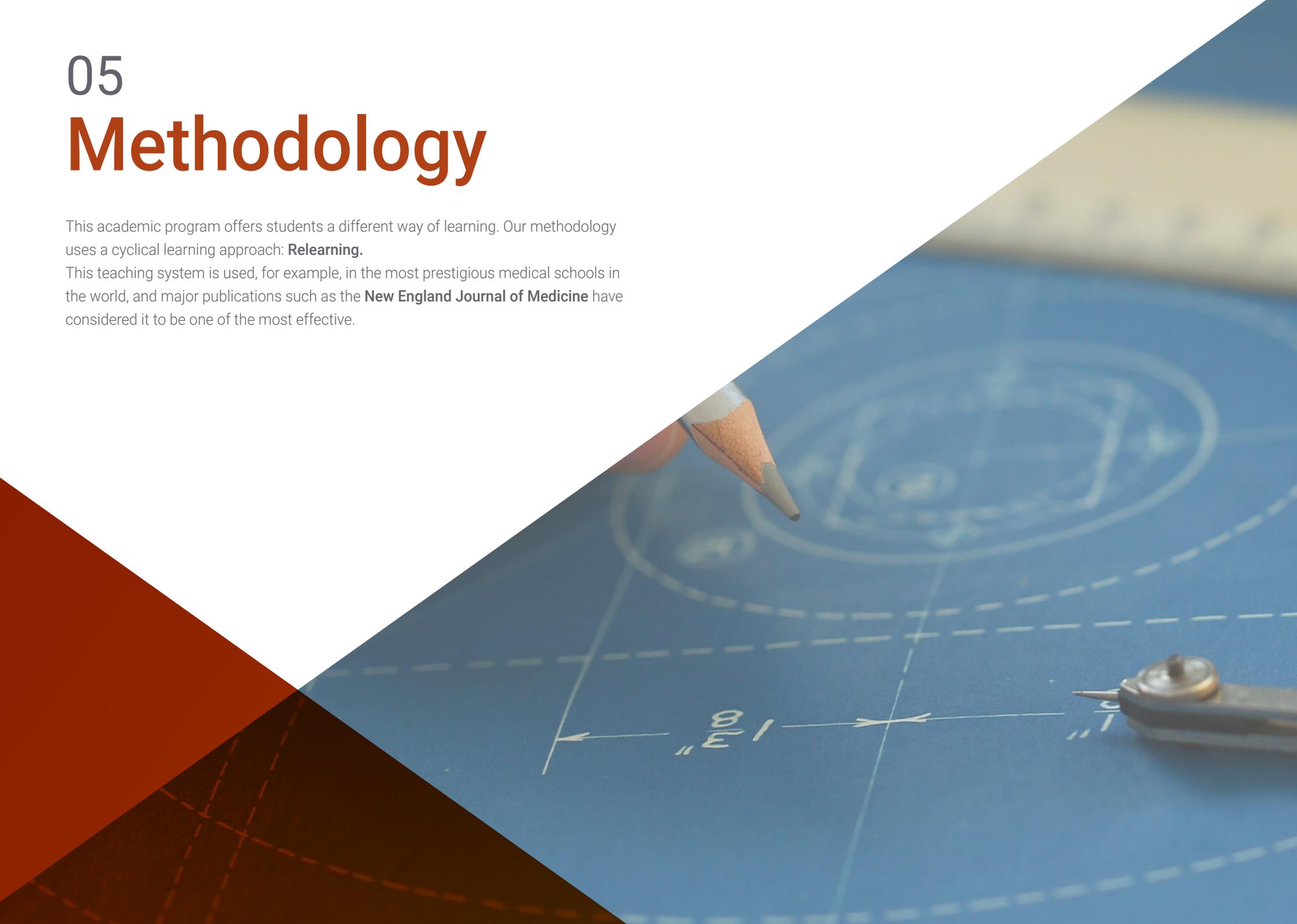
*A unique learning opportunity that will catapult your career to the next level  
Don't let it slip away"*

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.





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*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

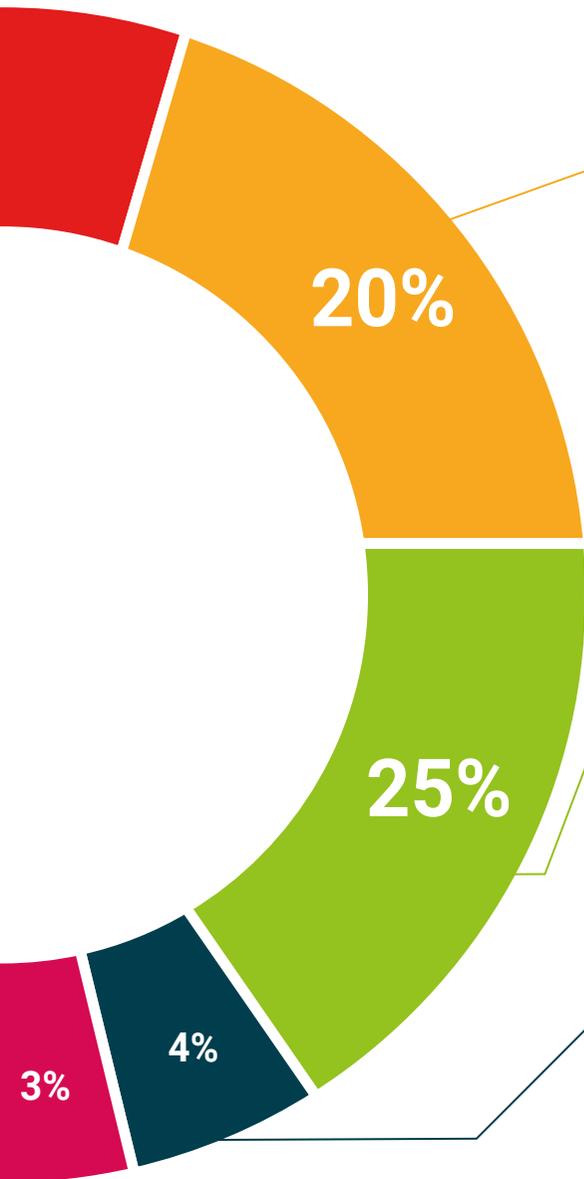
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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 Global University.



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

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Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**



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## Postgraduate Diploma Biomass, Biofuels, and Other Emerging Renewable Energy Sources

- » Modality: online
- » Duration: 6 months
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- » Exams: online

# Postgraduate Diploma

Biomass, Biofuels, and Other Emerging  
Renewable Energy Sources

