Professional Master's Degree

Renewable Energy

tech global university

Professional Master's Degree
Renewable Energy

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Global University**
- Credits: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/engineering/professional-master-degree/master-renewable-energy**

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01
Introduction

Incorporating the knowledge and trends that have emerged in recent times in the Renewable Energy sector requires a huge effort and constant updating from the professionals involved in this field. In this program, TECH has compiled the new vision that sustainable engineering has developed, with the most exhaustive review of the most recognized and valued new techniques and procedures. A complete and innovative study, which puts at your service the intensity of a very broad update, with the flexibility of a high impact and preparatory efficiency method.

An essential program for professionals in the Renewable Energy sector, which will allow you to acquire or expand the most innovative knowledge in this field"

This program is designed as a compendium of the knowledge and updates currently demanded and required by engineering, project consultancy and operation companies in Renewable Energy. A preparatory need that, once acquired, will allow the professionals to open a niche in the market and improve their professional stability.

This update will also help the student to understand in depth the situation of the world energy market and its regulatory framework at the international level, as well as the different parties involved in the financing, management and operation of Renewable Energy projects. It will also help the engineer to recognize the different international renewable technologies in this field.

In parallel, the student's managerial skills and abilities will be developed and enhanced. This will be the main basis for the engineering professional when working in the renewable energy sector in positions of high responsibility.

For all these reasons, this Professional Master's Degree in Renewable Energy will provide with thorough knowledge of the global context, as well as the technical, managerial and economic aspects of the complete cycle of Renewable Energy projects. With this knowledge, the student will be highly competitive in the Renewable Energy industry.

In addition, we have included access to 10 exclusive and complementary Masterclasses, delivered by a prestigious and internationally renowned professor, specialized in Innovation and Renewable Energy and with a remarkable and successful curriculum behind him. Thanks to his guidance, students will acquire the knowledge and skills to excel in this important and in-demand field.

This **Professional Master's Degree in Renewable Energy** contains the most complete and up-to-date program on the market. The most important features include:

- The development of case studies presented by experts in Renewable Energy
- 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

Apply the latest advances in Renewable Energy in your daily practice and give your resume a boost in value"

With the quality of a teaching method created to combine efficiency and flexibility, giving the professional all the options to achieve their goals with comfort and effectiveness"

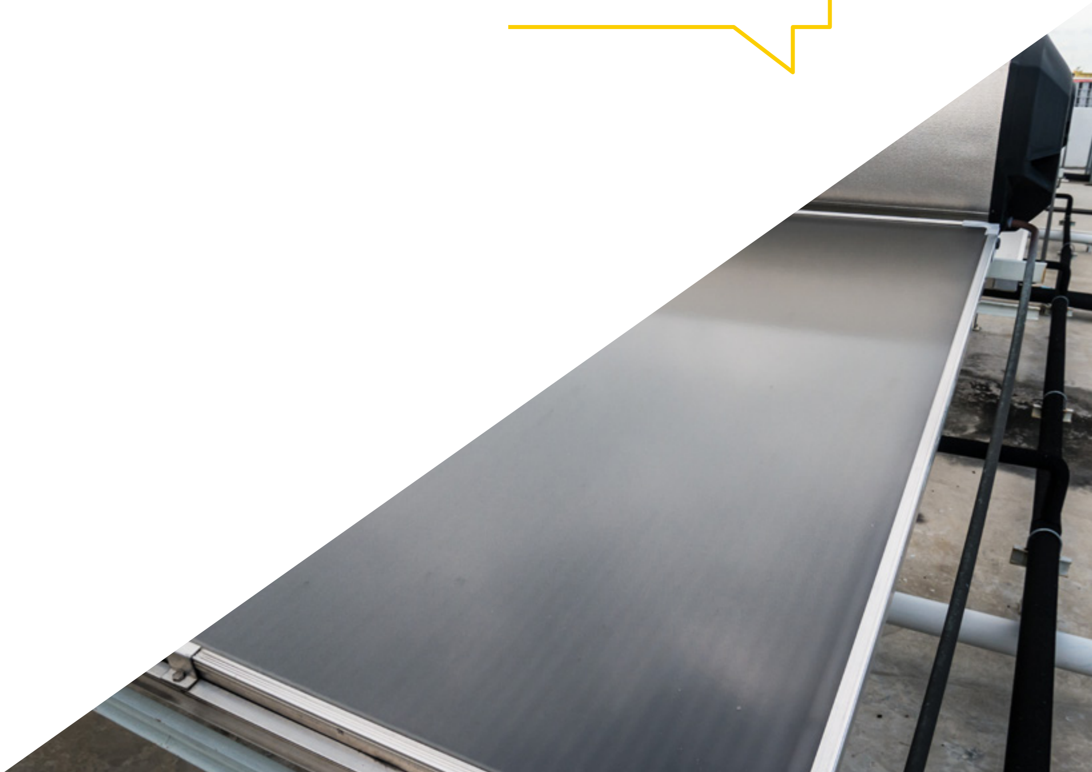
An intensive review that includes the study of the legislation related to Renewable Energy and how its application determines the current development of new projects.

Learn and analyze the latest techniques and developments implemented in this sector at international level, through a high-impact update.

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.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive refresher programmed for preparing 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 program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts.



02

Objectives

TECH has designed this comprehensive program with the aim of specializing engineering professionals to be able to design, implement and work on Renewable Energy projects, knowing 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 great importance in today's business landscape and for which large corporations are increasingly demanding competent engineers with solid specialized education.

With this program we offer engineers and related professionals, a complete specialization that will enable them to work with Renewable Energy with the latest information available"

General objectives

- Conduct a thorough analysis of current legislation and the energy system, from electricity generation to consumption, considering its fundamental role as a production factor in the economic system and the operation of various energy markets
- Identify the different stages necessary for the viability and implementation of a renewable energy project and its commissioning
- Analyze in-depth the different technologies and manufacturers available to create renewable energy systems, critically distinguishing and selecting 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
- Perform the sizing of installations for lesser-implemented energy sources, such as mini-hydraulic, geothermal, tidal, and clean energy vectors
- Appropriately interpret the 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 professionals in renewable energy should possess
- Integrate knowledge and face the complexity of making reasoned judgments in the applicable field of renewable energy companies
- Master various solutions or methodologies for addressing the same issue or phenomenon related to renewable energy, developing a critical mindset and understanding practical limitations

Specific objectives

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 a detailed understanding 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 energies: nuclear energy, large hydropower, conventional thermal power, combined cycle, and the current regulatory environment of both conventional and renewable generation systems, along with their evolution dynamics
- Apply acquired knowledge for the comprehension, conceptualization, and modeling of systems and processes in the field of energy technology, particularly within the area of renewable energy sources
- Effectively address and solve practical problems by identifying and defining the key elements that make up these issues
- Critically analyze data and draw conclusions within the field of energy technology
- Use acquired knowledge to conceptualize models, systems, and processes in the field of energy technology
- Analyze the potential of renewable energy and energy efficiency from multiple perspectives: technical, regulatory, economic, and market-related
- Gain the ability to search for information on public websites related to the electricity system and compile this information effectively

Module 2. Hydroelectric Energy Systems

- Conduct an in-depth analysis of Hydrology and the management of hydraulic resources related to hydroelectric energy
- Implement environmental management strategies within the field of hydroelectric energy
- Identify and select the appropriate equipment for various types of hydroelectric power generation
- Design, size, and operate hydroelectric power plants effectively
- Master the key elements of hydroelectric works and installations, focusing on technical, environmental, operational, and maintenance aspects

Module 3. Biomass and Biofuels Energy Systems

- 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
- Perform an economic analysis and gain detailed knowledge of the legislative and economic frameworks in the biofuels sector

Module 4. Solar Thermal Energy Systems

- Select the necessary equipment for different thermal solar energy applications
- Be capable of performing basic design and sizing of low and medium-temperature solar thermal installations
- Estimate solar radiation in a specific geographic location
- Recognize the conditions and restrictions for the application of solar thermal energy

Module 5. Wind Energy Systems

- Evaluate the advantages and disadvantages of replacing fossil fuels with renewable energy in different situations
- Gain in-depth knowledge for implementing wind energy systems and selecting the most appropriate technology based on location and economic needs
- Acquire scientific and technical language related to Renewable Energy
- Be able to establish hypotheses to address problems in the field of renewable energy and have the criteria to evaluate results in an objective and coherent manner
- Understand and master the fundamental concepts regarding wind types and the design of installations for wind measurement
- Understand and master the fundamental laws governing wind energy capture and the technologies related to wind turbines
- Develop projects for wind energy plants

Module 6. Grid-Connected and Off-Grid Photovoltaic Solar Energy Systems

- Master the specific knowledge required to meet the needs of specialized companies and become part of a highly qualified professional group in the design, construction, assembly, operation, and maintenance of photovoltaic solar energy systems and installations
- Apply the knowledge gained to understand, conceptualize, and model photovoltaic solar installations
- Synthesize knowledge and research methodologies appropriate for integration into the innovation and project development departments of any company in the photovoltaic solar energy field
- Effectively address and solve practical problems by identifying and defining the key elements that constitute them
- Apply innovative methods in solving problems related to photovoltaic solar energy
- Identify, find, and gather relevant data on the internet concerning photovoltaic solar energy
- Design and carry out research based on analysis, modeling, and experimentation in the field of photovoltaic solar energy
- Understand and handle the specific regulations regarding photovoltaic solar installations in detail
- Gain an in-depth understanding and select the necessary equipment for different photovoltaic solar energy applications
- Design, size, execute, operate, and maintain photovoltaic solar energy installations

Module 7. 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
- Explore recent advancements in the use of new materials for fuel cell production and their most innovative applications
- Classify ATEX zones when hydrogen is used as a fuel

Module 8. Hybrid Systems and Energy Storage

- Analyze the importance of electrical energy storage systems in the current energy sector landscape, demonstrating their impact on the planning of generation, distribution, and consumption models
- Identify the main technologies available in the market, outlining their characteristics and applications
- Develop a cross-sector perspective on how the deployment of electrical storage systems will impact the configuration of new energy models, with a special focus on the automotive industry and electric mobility
- Understand the typical steps involved in the development of projects with storage systems, particularly those focused on batteries
- Identify the key concepts for integrating storage systems into electrical generation systems, especially with photovoltaic and wind energy systems

Module 9. Development, Financing, and Feasibility of Renewable Energy Projects

- Gain in-depth knowledge and analyze the technical documentation required for the viability, financing, and processing of Renewable Energy projects
- Manage the technical documentation up to the "Ready to Build" stage
- Establish the types of financing available for renewable energy projects
- Understand and conduct an economic and financial study of a renewable energy project
- Utilize all management and planning tools for project execution
- Master the insurance aspects involved in the financing and feasibility of renewable energy projects, both in the construction phase and in operation
- Deepen knowledge in the processes of asset valuation and damage assessment for renewable energy projects

Module 10. Digital Transformation and Industry 4.0 Applied to Renewable Energy Systems

- Optimize processes, both in production and in Operations and Maintenance
- Gain detailed knowledge of the capabilities of digital industrialization and automation in renewable energy installations
- Understand and analyze in-depth the different alternatives and technologies offered by digital transformation
- Implement and assess mass capture systems (IoT)
- Use tools like Big Data to enhance energy processes and/or installations
- Gain detailed knowledge of the scope of drones and autonomous vehicles in preventive maintenance
- Learn new methods for energy commercialization Explore Blockchain and Smart Contracts for energy trading and transactions

03
Skills

After passing the evaluations of the Professional Master's Degree in Renewable Energy, the professional will have acquired the necessary skills for a quality practice All knowledge will be developed based on an innovative educational methodology that favors learning. In this way, students will be able to optimally manage with a global vision their intervention in the Renewable Energy environment, from a national and international context and taking into account aspects such as the market, the structure of the electricity system and the development of efficient and effective projects.

This program will allow you to learn about the legislation and the international environment in which new projects that include and contemplate the use of Renewable Energy are being developed"

General skills

- Master the global environment of Renewable Energy, from the international energy context, markets, electricity system structure, to project development, operation and maintenance plans; and in sectors such as insurance and asset management
- Apply acquired knowledge and problem-solving skills in current or unfamiliar environments within broader contexts related to Renewable Energy
- Be able to integrate knowledge and get a thorough understanding of the different sources of Renewable Energy, as well as the importance of their use in today's world
- Learn to communicate concepts of design, development and management of the different Renewable Energy systems
- Gain a detailed understanding of the importance of hydrogen as an energy carrier of the future and large-scale storage within the integration of Renewable Energy systems
- Understand and internalize the scope of digital and industrial transformation applied to Renewable Energy systems for their efficiency and competitiveness in the future energy market
- Be able to critically analyze, assess and synthesize new and complex ideas related to the field of Renewable Energy
- Be able to promote, in professional contexts, technological, social or cultural progress within a knowledge-based society

Specific skills

- Gain in-depth knowledge of the potential of Renewable Energy from multiple perspectives: technical, regulatory, economic and market
- Project, calculate and design products, processes, installations and plants of the most common Renewable Energy in our environment: wind energy, solar thermal energy, solar photovoltaic, biomass and hydropower
- Conduct research, development and innovation in products, processes and methods related to Renewable Energy systems
- Follow the technological evolution of Renewable Energy and have prospective knowledge of this evolution
- Understand the operating principles of the following power generation technologies: solar thermal, mini-hydro, biomass, cogeneration, geothermal, geothermal and wave power
- Master the current state of technical and economic development of these technologies
- Understand the role of the main elements of each technology, their relative importance and the constraints imposed by each of them
- Identify the existing alternatives for each technology, as well as the advantages and disadvantages of each of them
- Be able to assess the resource potential and perform basic sizing for solar thermal, mini-hydro and biomass power plants
- Have a transversal vision with other sectors in which the deployment of electric storage systems will have an impact on the configuration of new energy models
- Gain in-depth knowledge of the digital transformation applied to Renewable Energy systems, as well as the implementation and use of the most important tools

04

Course Management

TECH applies a criterion based on high quality in all its programs. This guarantees students that by studying here they will find the best educational content taught by the best professionals in the sector In this sense, this Professional Master's Degree in Renewable Energy counts on highly prestigious professionals in this field, who bring to the program 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.

Learn with the best and acquire the knowledge and skills you need to intervene in this area of development with total success"

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

- 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

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
- Railway Engineering, UNED
- Responsible for the appraisal, valuation and valuation of technologies and processes of renewable energy generation facilities at RTS International Loss Adjuster

Management

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

Dr. Gutiérrez, María Delia

- Vice President of Operations at the Tecnológico de Monterrey
- Professional Master's Degree in Environmental Systems at Tecnológico de Monterrey
- PhD in Engineering Science with a major in Energy and Environment from Dartmouth College
- Professor of Climate Change and Energy Use and Ecological Processes for Human Development at Tec de Monterrey

Mr. Serrano, Ricardo

- Director of Andalusia, Willis Towers Watson
- Degree in Law from the University of Seville
- Participation in the design and placement of insurance programs for renewable energy companies and other industrial activities

Mr. Trillo León, Eugenio

- Industrial Engineer specialized in Energy, University of Seville
- Master's Degree in Industrial Maintenance Engineering, University of Huelva
- Postgraduate Diploma in Project Management, UCLA
- CEO of The Lean Hydrogen Company
- Secretary of the Andalusian Hydrogen Association

Mr. Díaz Martin, Jonay Andrés

- Higher industrial engineer specialized in Electricity, University of Las Palmas de Gran Canaria
- Master's Degree in International Logistics and Supply Chain Management, EUDE Business School
- Master's Degree in Integrated Management of Prevention, Quality and Environment, Camilo José Cela University

Mr. Álvarez Morón, Gregorio

- Agricultural Engineer, Rural Engineering, Independent professional
- Director of projects, works and operations, SEIASA (State Mercantile Company of Agrarian Infrastructures)
- Administrator, Bullring of Santa Olalla del Cala, Huelva
- Engineering office, Tharsis Civil Engineering SL
- Site Manager at Grupo Tragsa
- Bilingual High School Teacher, Junta de Andalucía
- Teacher in collaboration with WATS Ingeniería, a Spanish company specialized in water engineering, agronomy, energy and the environment
- Agricultural Engineer, Rural Engineering, ETSIAM, School of Agricultural and Forestry Engineering
- Master's Degree in Occupational Risk Prevention, Specialization in Occupational Safety
- Master's Degree in Teacher Training for Secondary, Baccalaureate and Vocational Training
- ThePowerMBA, Business Expert Program - Business Administration and Management, ThePower Business School
- Environmental Volunteer, Doñana National Park, Spain

Mr. Martín Grande, Ángel

- Director in Chile at Revergy
- Industrial Engineer, University of Seville
- Master's Degree in Occupational Risk Prevention

- MBA in Technical Management in Renewable Energy and Thermal Power Plants
- Operations management of more than 4 GW of solar and wind power plants in Spain, Europe, United Arab Emirates, United States, Peru, Chile, Uruguay and Argentina

Mr. Montoto Rojo, Antonio

- Electronics Engineer, University of Seville
- MBA at Camilo José Cela University
- Account Manager for storage systems at Gamesa Electric

Mr. Pérez García, Fernando

- Insurance Loss Adjuster
- Specialist in the adjustment and appraisal of industrial risks, technical and energy claims, especially in the renewable energy sector (wind, hydro, photovoltaic, solar thermal and biomass)
- National Loss Adjuster Expert (NLAE) by the European Federation of Loss Adjustment Experts (FUEDI)
- European Loss Adjustment Expert (ELAE) by the European Federation of Loss Adjustment Experts (FUEDI)
- Machinery Breakdown and Renewable Energy Specialist
- Liability Specialist
- Specialist in Loss of Profits Associated with Power Plant Losses
- Specialization Course in Analytical and Financial Accounting
- Degree in Technical Industrial Engineering, specialized in Electricity, from the University of Zaragoza

Dr. De la Cal Herrera, José Antonio

- Industrial Engineer, Polytechnical University of Madrid
- MBA in Business Administration and Management from the Business School of Commercial and Marketing Management, ESIC
- PhD 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 in the Department of Business Organization, University of Jaén

Mr. Granja Pacheco, Manuel

- Civil Engineer, Alfonso X El Sabio University
- Master's Degree in Renewable Energy Installation Management and Project Internationalization by ITE (Instituto Tecnológico de la Energía)
- Manages the operations of a company specialized in the development of Renewable Energy projects, with a track record of more than 3,000 MW of projects at national and international level

Mr. Caballero López, Jaime

- Industrial Technical Engineer Expert in Photovoltaic Energy and Solar Energy
- Shift Manager at Helioenergy Thermosolar Platform, Rioglass Servicios SLU
- Expert in Photovoltaic Energy and Solar Energy
- Shift Manager at the Helioenergy Thermosolar Platform, Abengoa Solar
- Pressure Equipment Commissioning Manager, Siemens Solar Thermal Power Plant in Spain and Portugal
- Supervision and Control Manager in Construction and commissioning of Soleval I Thermosolar Plant (50 MW) Lebrija, Atisae
- Production and Personnel Management at Helioenergy I and II Solar Thermal Platform, Abengoa Solar
- Control Room Operator at Helioenergy I and II Thermosolar Platform, Bester Generación
- Technical Industrial Engineering with Mechanical Specialty, University of Seville
- Professional Master's Degree in Industrial Engineering and Maintenance Management, University of Seville
- Expert in operations from Control Room to Plant, with METSO program
- International Certification Project Management-Mainfor in Technological and Educational Innovation

Mr. Despouy Zulueta, Ignacio

- Project Manager and Discipline Manager at WSP CHILE
- Founder and Senior Consultant at Eficiencia Ambiental SpA.
- Business Developer at Kintlein & Ose GMBH & co. (Joint Venture)
- Project Manager at Arcadis Chile
- Degree in Civil Hydraulic Engineering with specialization in Hydraulics, Sanitary and Environmental Engineering from the University of Chile
- Master's Degree in Environment and Resource Management from Vrije Universiteit, Amsterdam
- Diploma in European Energy Manager from the Chilean-German Chamber of Commerce

05

Structure and Content

The syllabus of the program is structured as a comprehensive tour through each and every one of the concepts required to understand and work in this field. Therefore, through an innovative educational approach based on the practical application of the contents, the engineer will learn and understand the operation of Renewable Energy, knowing how to design and implement projects in this sense, and provide 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.

A comprehensive syllabus focused on acquiring knowledge and converting it into real skills, created to propel you to excellence"

Module 1. Renewable Energy and Its Current Landscape

1.1. Renewable Energy
  1.1.1. Fundamental Principles
  1.1.2. Conventional Energy vs. Renewable Energy
  1.1.3. Advantages and Disadvantages of Renewable Energy
1.2. International Environment of Renewable Energy
  1.2.1. Fundamentals of Climate Change and Energy Sustainability. Renewable Energy vs. Non-Renewable Energy
  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. Hydroelectric Energy Systems

2.1. Water, a Natural Resource. Hydroelectric Energy
 2.1.1. Water on Earth. Flows and Uses of Water
 2.1.2. Water Cycle
 2.1.3. Early Uses of Hydroelectric Energy
2.2. From Hydroelectric Energy to Hydropower
 2.2.1. Origin of Hydroelectric Utilization
 2.2.2. Hydroelectric Power Plant
 2.2.3. Current Utilization
2.3. Types of Hydroelectric Power Plants by Capacity
 2.3.1. Large Hydroelectric Power Plant
 2.3.2. Mini and Micro Hydroelectric Power Plants
 2.3.3. Conditions and Future Perspectives

2.4. Types of Hydroelectric Power Plants by Layout
- 2.4.1. Run-of-River Power Plant
- 2.4.2. Flowing Power Plant
- 2.4.3. Conduction Power Plant
- 2.4.4. Pumped Storage Hydroelectric Power Plant

2.5. Hydraulic Elements of a Power Plant
- 2.5.1. Intake and Water Intake Structure
- 2.5.2. Forced Conduction Connection
- 2.5.3. Discharge Conduction

2.6. Electromechanical Elements of a Power Plant
- 2.6.1. Turbine, Generator, Transformer, and Electrical Line
- 2.6.2. Regulation, Control, and Protection
- 2.6.3. Automation and Telecontrol

2.7. The Key Element: The Hydroelectric Turbine
- 2.7.1. Operation
- 2.7.2. Types
- 2.7.3. Selection Criteria

2.8. Utilization Calculation and Sizing
- 2.8.1. Available Power: Flow and Head
- 2.8.2. Electrical Power
- 2.8.3. Efficiency. Production

2.9. Administrative and Environmental Aspects
- 2.9.1. Benefits and Drawbacks
- 2.9.2. Administrative Procedures. Concessions
- 2.9.3. Environmental Impact

2.10. Design and Project of a Mini Hydroelectric Power Plant
- 2.10.1. Mini Hydroelectric Power Plant Design
- 2.10.2. Cost Analysis
- 2.10.3. Economic Feasibility Analysis

Module 3. Biomass Energy **Systems and Biofuels**

3.1. Biomass as a Renewable Energy Resource
- 3.1.1. Fundamental Principles
- 3.1.2. Origins, Types, and Current Uses
- 3.1.3. Main Physicochemical Parameters
- 3.1.4. Products Obtained
- 3.1.5. Quality Standards for Solid Biofuels
- 3.1.6. Advantages and Disadvantages of the Use of Biomass in Buildings

3.2. Physical Conversion Processes. Pre-Treatments
- 3.2.1. Justification
- 3.2.2. Types of Processes
- 3.2.3. Cost and Profitability Analysis

3.3. Main Chemical Conversion Processes of Residual Biomass. Products and Applications
- 3.3.1. Thermochemicals
- 3.3.2. Biochemicals
- 3.3.3. Other Processes
- 3.3.4. Investment Profitability Analysis

3.4. Gasification Technology: Technical and Economic Aspects Advantages and Disadvantages
- 3.4.1. Areas of Application
- 3.4.2. Biomass Requirements
- 3.4.3. Types of Gasifiers
- 3.4.4. Properties of Synthetic Gas (Syngas)
- 3.4.5. Applications of Syngas
- 3.4.6. Existing Commercial Technologies
- 3.4.7. Profitability Analysis
- 3.4.8. Advantages and Disadvantages

3.5. Pyrolysis. Products Obtained and Costs. Advantages and Disadvantages
- 3.5.1. Area of Application
- 3.5.2. Biomass Requirements
- 3.5.3. Types of Pyrolysis
- 3.5.4. Resulting Products
- 3.5.5. Cost Analysis (CAPEX and OPEX). Economic Profitability
- 3.5.6. Advantages and Disadvantages

3.6. Biomethanation
  3.6.1. Areas of Application
  3.6.2. Biomass Requirements
  3.6.3. Main Technologies. Co-digestion
  3.6.4. Products Obtained
  3.6.5. Applications of Biogas
  3.6.6. Cost Analysis. Investment Profitability Study

3.7. Design and Development of Biomass Energy Systems
  3.7.1. Sizing of a Biomass Combustion Plant for Electricity Generation
  3.7.2. Biomass Installation in Public Buildings. Sizing and Calculation of the Storage System. Determining the Payback Period for Substituting Fossil Fuels (Natural Gas and Diesel C)
  3.7.3. Designing an Industrial Biogas Production System
  3.7.4. Evaluating Biogas Production at a Municipal Solid Waste (MSW) Landfill

3.8. Design of Business Models Based on Studied Technologies
  3.8.1. Gasification for Self-Consumption Applied to the Agro-Food Industry
  3.8.2. Biomass Combustion Using the ESE Model Applied to the Industrial Sector
  3.8.3. Production of Biochar from Olive Oil Industry Byproducts
  3.8.4. Production of Green Hydrogen from Biomass
  3.8.5. Production of Biogas from Olive Oil Industry Byproducts

3.9. Profitability Analysis of a Biomass Project. Applicable Legislation, Incentives and Financing
  3.9.1. Structure of an Investment Project: CAPEX, OPEX, Revenues/Savings, IRR, NPV, and Payback
  3.9.2. Key Considerations: Electrical Infrastructure, Access, Space Availability, etc
  3.9.3. Applicable Legislation
  3.9.4. Administrative Procedures. Planning
  3.9.5. Incentives and Financing

3.10. Conclusions. Environmental, Social, and Energy Aspects of Biomass
  3.10.1. Bioeconomy and Circular Economy
  3.10.2. Sustainability. CO2 Emissions Avoided. Carbon Sinks
  3.10.3. Alignment with UN SDGs and the Green Deal
  3.10.4. Employment Generated by Bioenergy. Value Chain
  3.10.5. Contribution of Bioenergy to the Energy Mix
  3.10.6. Productive Diversification and Rural Development

Module 4. Solar Thermal Energy Systems

4.1. Solar Radiation and Solar Thermal Systems
  4.1.1. Fundamental Principles of Solar Radiation
  4.1.2. Components of Radiation
  4.1.3. Market Evolution in Solar Thermal Systems

4.2. Static Solar Collectors: Description and Efficiency Measurement
  4.2.1. Classification and Components of the Collector
  4.2.2. Losses and Energy Conversion
  4.2.3. Characteristic Values and Efficiency of the Collector

4.3. Applications of Low-Temperature Solar Collectors
  4.3.1. Technology Development
  4.3.2. Types of Solar Heating and DHW Installations
  4.3.3. Sizing of Installations

4.4. DHW or Climate Control Systems
  4.4.1. Main Elements of the Installation
  4.4.2. Assembly and Maintenance
  4.4.3. Calculation and Control Methods for Installations

4.5. Medium-Temperature Solar Thermal Systems
  4.5.1. Types of Concentrators
  4.5.2. Parabolic Trough Collectors
  4.5.3. Solar Tracking System

4.6. Designing a Solar System with Parabolic Trough Collectors
- 4.6.1. Solar Field. Main Components of the Parabolic Trough Collector
- 4.6.2. Sizing the Solar Field
- 4.6.3. HTF System

4.7. Operation and Maintenance of Solar Systems with Parabolic Trough Collectors
- 4.7.1. Electricity Generation Process through CSP
- 4.7.2. Solar Field Conservation and Cleaning
- 4.7.3. Preventive and Corrective Maintenance

4.8. High-Temperature Solar Thermal Systems. Tower Plants
- 4.8.1. Design of a Tower Plant
- 4.8.2. Sizing of the Heliostat Field
- 4.8.3. Molten Salt System

4.9. Thermoelectric Generation
- 4.9.1. Rankine Cycle
- 4.9.2. Theoretical Fundamentals of Turbine-Generator
- 4.9.3. Characterization of a Solar Thermal Power Plant

4.10. Other High-Concentration Systems: Parabolic Discs and Solar Furnaces
- 4.10.1. Types of Concentrators
- 4.10.2. Tracking Systems and Main Elements
- 4.10.3. Applications and Differences Compared to Other Technologies

Module 5. Wind Energy Systems

5.1. Wind as a Natural Resource
- 5.1.1. Behavior and Classification of Wind
- 5.1.2. The Wind Resource on Our Planet
- 5.1.3. Measurement of Wind Resources
- 5.1.4. Wind Energy Forecasting

5.2. Wind Energy
- 5.2.1. Evolution of Wind Energy
- 5.2.2. Temporal and Spatial Variability of the Wind Resource
- 5.2.3. Applications of Wind Energy

5.3. The Wind Turbine
- 5.3.1. Types of Wind Turbines
- 5.3.2. Components of a Wind Turbine
- 5.3.3. Operation of a Wind Turbine

5.4. Wind Generator
- 5.4.1. Asynchronous Generators: Wound Rotor
- 5.4.2. Asynchronous Generators: Squirrel-Cage Rotor
- 5.4.3. Synchronous Generators: Independent Excitation
- 5.4.4. Synchronous Permanent Magnet Generators

5.5. Site Selection
- 5.5.1. Basic Criteria
- 5.5.2. Specific Considerations
- 5.5.3. Onshore and Offshore Wind Installations

5.6. Exploitation of a Wind Farm
- 5.6.1. Exploitation Model
- 5.6.2. Control Operations
- 5.6.3. Remote Operation

5.7. Wind Farm Maintenance
- 5.7.1. Types of Maintenance: Corrective, Preventive, and Predictive
- 5.7.2. Main Failures
- 5.7.3. Machine Improvement and Resource Organization
- 5.7.4. Maintenance Costs (OPEX)

5.8. Impact of Wind Energy and Environmental Maintenance
- 5.8.1. Impact on Flora and Erosion
- 5.8.2. Impact on Avifauna
- 5.8.3. Visual and Acoustic Impact
- 5.8.4. Environmental Maintenance

5.9. Data Analysis and Performance
- 5.9.1. Energy Production and Revenue
- 5.9.2. Control Indicators (KPIs)
- 5.9.3. Wind Farm Performance

5.10. Design of Wind Farms
- 5.10.1. Design Considerations
- 5.10.2. Wind Turbine Layout
- 5.10.3. Effect of Wake on the Distance Between Turbines
- 5.10.4. Medium and High Voltage Equipment
- 5.10.5. Installation Costs (CAPEX)

Module 6. Grid-Connected and Off-Grid Photovoltaic Solar Energy Systems

6.1. Photovoltaic Solar Energy. Equipment and Environment
- 6.1.1. Fundamental Principles of Photovoltaic Solar Energy
- 6.1.2. Current Situation in the Global Energy Sector
- 6.1.3. Main Components in Solar Installations

6.2. Photovoltaic Generators. Principles of Operation and Characterization
- 6.2.1. Operation of the Solar Cell
- 6.2.2. Design Standards. Module Characterization: Parameters
- 6.2.3. I-V Curve
- 6.2.4. Technologies of Current Market Modules

6.3. Grouping of Photovoltaic Modules
- 6.3.1. Design of Photovoltaic Generators: Orientation and Tilt
- 6.3.2. Installation Structures for Photovoltaic Generators
- 6.3.3. Solar Tracking Systems. Communication Environment

6.4. Energy Conversion. The Inverter
- 6.4.1. Types of Inverters
- 6.4.2. Characterization
- 6.4.3. Maximum Power Point Tracking (MPPT) Systems and Inverter Performance

6.5. Transformation Center
- 6.5.1. Function and Parts of a Transformation Center
- 6.5.2. Sizing and Design Considerations
- 6.5.3. Market and Equipment Selection

6.6. Other Systems in a Photovoltaic Solar Plant
- 6.6.1. Monitoring and Control
- 6.6.2. Safety and Surveillance
- 6.6.3. Substation and High Voltage

6.7. Grid-Connected Photovoltaic Systems
- 6.7.1. Design of Large-Scale Solar Parks. Preliminary Studies
- 6.7.2. Self-Consumption
- 6.7.3. Simulation Tools

6.8. Off-Grid Photovoltaic Systems
- 6.8.1. Components of an Off-Grid Installation: Regulators and Solar Batteries
- 6.8.2. Uses: Pumping, Lighting, etc
- 6.8.3. Solar Democratization

6.9. Operation and Maintenance of Photovoltaic Installations
- 6.9.1. Maintenance Plans
- 6.9.2. Personnel and Equipment
- 6.9.3. Maintenance Management Software

6.10. New Improvement Lines in Photovoltaic Parks
- 6.10.1. Distributed Generation
- 6.10.2. New Technologies and Trends
- 6.10.3. Automation

Module 7. Other Emerging Renewable Energies and Hydrogen as an Energy Carrier

7.1. Current Situation and Outlook
- 7.1.1. Applicable Legislation
- 7.1.2. Current Situation and Future Models
- 7.1.3. Incentives and R&D&I Funding

7.2. Marine Energy I: Tidal Energy
- 7.2.1. Origin and Potential of Tidal Energy
- 7.2.2. Technologies to Harness Tidal Energy
- 7.2.3. Costs and Environmental Impact of Tidal Energy

7.3. Marine Energy II: Wave Energy
- 7.3.1. Origin and Potential of Wave Energy
- 7.3.2. Technologies to Harness Wave Energy
- 7.3.3. Costs and Environmental Impact of Wave Energy

7.4. Marine Energy III: Ocean Thermal Energy
- 7.4.1. Origin and Potential of Ocean Thermal Energy
- 7.4.2. Technologies to Harness Ocean Thermal Energy
- 7.4.3. Costs and Environmental Impact of Ocean Thermal Energy

7.5. Geothermal Energy
- 7.5.1. Potential of Geothermal Energy
- 7.5.2. Technology to Harness Geothermal Energy
- 7.5.3. Costs and Environmental Impact of Geothermal Energy

7.6. Applications of the Technologies Studied
- 7.6.1. Applications
- 7.6.2. Cost and Profitability Analysis
- 7.6.3. Productive Diversification and Rural Development
- 7.6.4. Advantages and Disadvantages

7.7. Hydrogen as an Energy Carrier
- 7.7.1. Adsorption Process
- 7.7.2. Heterogeneous Catalysis
- 7.7.3. Hydrogen as an Energy Carrier

7.8. Hydrogen Generation and Integration in Renewable Energy Systems. "Green Hydrogen"
- 7.8.1. Hydrogen Production
- 7.8.2. Hydrogen Storage and Distribution
- 7.8.3. Use and Applications of Hydrogen

7.9. Fuel Cells and Electric Vehicles
- 7.9.1. Operation of Fuel Cells
- 7.9.2. Types of Fuel Cells
- 7.9.3. Applications: Portable, Stationary, and Transportation Applications
- 7.9.4. Electric Vehicles, Drones, Submarines, etc

7.10. Safety and ATEX Regulations
- 7.10.1. Current Legislation
- 7.10.2. Ignition Sources
- 7.10.3. Risk Assessment
- 7.10.4. Classificaion of ATEX Zones
- 7.10.5. Work Equipment and Tools to be Used in ATEX Zones

Module 8. Hybrid Systems and Energy Storage

8.1. Electric Storage Technologies
- 8.1.1. The Importance of Energy Storage in the Energy Transition
- 8.1.2. Energy Storage Methods
- 8.1.3. Main Storage Technologies

8.2. Industrial View of Electric Storage
- 8.2.1. Automotive and Mobility
- 8.2.2. Stationary Applications
- 8.2.3. Other Applications

8.3. Elements of a Battery Energy Storage System (BESS)
- 8.3.1. Batteries
- 8.3.2. Adaptation
- 8.3.3. Control

8.4. Integration and Applications of BESS in Electrical Grids
- 8.4.1. Integration of Storage Systems
- 8.4.2. Applications in Grid-Connected Systems
- 8.4.3. Applications in Off-Grid and Microgrid Systems

8.5. Business Models I
- 8.5.1. Stakeholders and Business Structures
- 8.5.2. Feasibility of Projects with BESS
- 8.5.3. Risk Management

8.6. Business Models II
- 8.6.1. Project Construction
- 8.6.2. Performance Evaluation Criteria
- 8.6.3. Operation and Maintenance

8.7. Lithium-Ion Batteries
- 8.7.1. Evolution of Batteries
- 8.7.2. Main Elements
- 8.7.3. Technical and Safety Considerations

8.8. Hybrid PV Systems with Storage
- 8.8.1. Design Considerations
- 8.8.2. PV + BESS Services
- 8.8.3. Studied Types

8.9. Hybrid Wind Systems With Storage
 8.9.1. Design Considerations
 8.9.2. Wind + BESS Services
 8.9.3. Studied Types
8.10. Future of Storage Systems
 8.10.1. Technological Trends
 8.10.2. Economic Outlook
 8.10.3. Storage Systems in BESS

Module 9. Development, Financing, and Feasibility of Renewable Energy Projects

9.1. Identification of Stakeholders
 9.1.1. Developers, Engineering Firms, and Consultants
 9.1.2. Investment Funds, Banks, and Other Stakeholders
9.2. Renewable Energy Project Development
 9.2.1. Main Stages of Development
 9.2.2. Key Technical Documentation
 9.2.3. Sales Process. RTB
9.3. Evaluation of Renewable Energy Projects
 9.3.1. Technical Feasibility
 9.3.2. Commercial Feasibility
 9.3.3. Environmental and Social Feasibility
 9.3.4. Legal Feasibility and Associated Risks
9.4. Financial Fundamentals
 9.4.1. Financial Knowledge
 9.4.2. Analysis of Financial Statements
 9.4.3. Financial Modeling
9.5. Economic Valuation of Renewable Energy Projects and Companies
 9.5.1. Valuation Fundamentals
 9.5.2. Valuation Methods
 9.5.3. Calculation of Profitability and Financing Potential of Projects
9.6. Financing Renewable Energy
 9.6.1. Project Finance Characteristics
 9.6.2. Financing Structuring
 9.6.3. Risks in Financing
9.7. Renewable Asset Management: Asset Management
 9.7.1. Technical Supervision
 9.7.2. Financial Supervision
 9.7.3. Claims, Permits Supervision, and Contract Management
9.8. Insurance in Renewable Energy Projects. Construction Phase
 9.8.1. Developer and Constructor. Specialized Insurance
 9.8.2. Construction Insurance (CAR)
 9.8.3. Professional Liability Insurance
 9.8.4. Advance Loss of Profit (ALOP) Clause
9.9. Insurance in Renewable Energy Projects. Operation and Exploitation Phase
 9.9.1. Property Insurance. Multi-risk (OAR)
 9.9.2. Contractor's O&M Insurance (Liability or Professional Liability)
 9.9.3. Appropriate Coverage. Consequential Loss and Environmental Loss
9.10. Valuation and Assessment of Damage in Renewable Energy Assets
 9.10.1. Valuation and Industrial Assessment Services: Renewable Energy Installations
 9.10.2. Intervention and Policy
 9.10.3. Material Damage and Consequential Loss
 9.10.4. Types of Claims: Photovoltaic, Solar Thermal, Hydroelectric, and Wind

Module 10. Digital Transformation and Industry 4.0. Applied to Renewable Energy Systems

10.1. Current Situation and Outlook
- 10.1.1. Current Situation of Technologies
- 10.1.2. Trends and Evolution
- 10.1.3. Future Challenges and Opportunities

10.2. Digital Transformation in Renewable Energy Systems
- 10.2.1. The Age of Digital Transformation
- 10.2.2. Digitalization of the Industry
- 10.2.3. 5G Technology

10.3. Automation and Connectivity: Industry 4.0
- 10.3.1. Automatic Systems
- 10.3.2. Connectivity
- 10.3.3. The Importance of the Human Factor. Key Factor

10.4. Lean Management 4.0
- 10.4.1. Lean Management 4.0
- 10.4.2. Benefits of Lean Management in the Industry
- 10.4.3. Lean Tools in the Management of Renewable Energy Installations

10.5. Mass Capture Systems. IoT
- 10.5.1. Sensors and Actuators
- 10.5.2. Continuous Data Monitoring
- 10.5.3. Big Data
- 10.5.4. SCADA Systems

10.6. IoT Project Applied to Renewable Energy
- 10.6.1. Monitoring System Architecture
- 10.6.2. IoT System Architecture
- 10.6.3. IoT Applied Cases

10.7. Big Data and Renewable Energy
- 10.7.1. Big Data Principles
- 10.7.2. Big Data Tools
- 10.7.3. Usability in the Energy Sector and Renewable Energy

10.8. Proactive or Predictive Maintenance
- 10.8.1. Predictive Maintenance and Fault Diagnosis
- 10.8.2. Instrumentation: Vibrations, Thermography, Damage Analysis and Diagnosis Techniques
- 10.8.3. Predictive Models

10.9. Drones and Autonomous Vehicles
- 10.9.1. Main Characteristics
- 10.9.2. Applications of Drones
- 10.9.3. Applications of Autonomous Vehicles

10.10. New Forms of Energy Commercialization. Blockchain and Smart Contracts
- 10.10.1. Information Systems Using Blockchain
- 10.10.2. Tokens and Smart Contracts
- 10.10.3. Present and Future Applications for the Electrical Sector
- 10.10.4. Available Platforms and Blockchain-Based Application Cases

“A unique learning opportunity that will catapult your career to the next level”

06
Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

Case Study to contextualize all content

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

At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"

You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.

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

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

> *Our program prepares you to face new challenges in uncertain environments and achieve success in your career"*

The case method is the most widely used learning system in the best faculties in the world. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

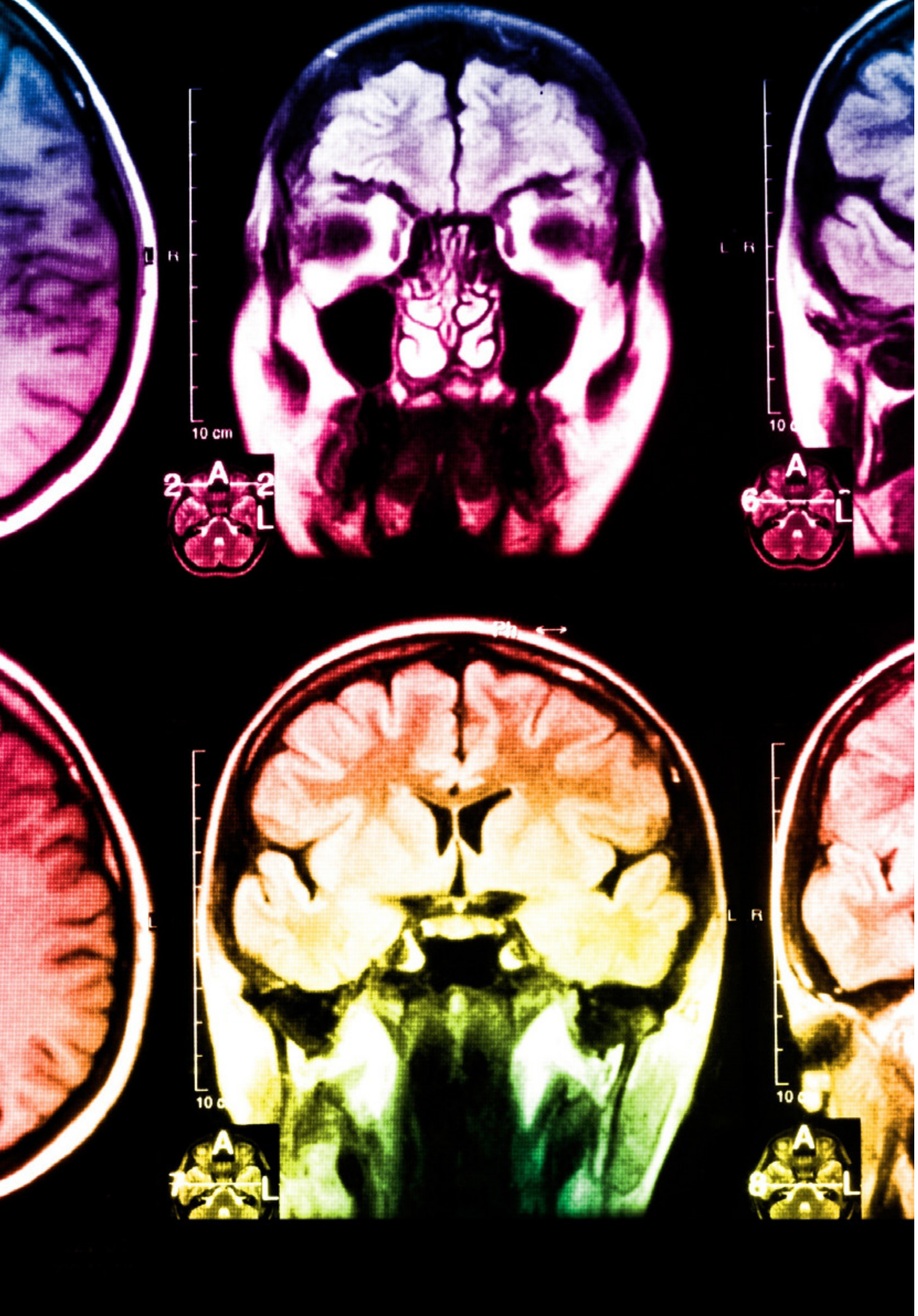
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH, you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically. This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.

This program offers the best educational material, prepared with professionals in mind:

Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

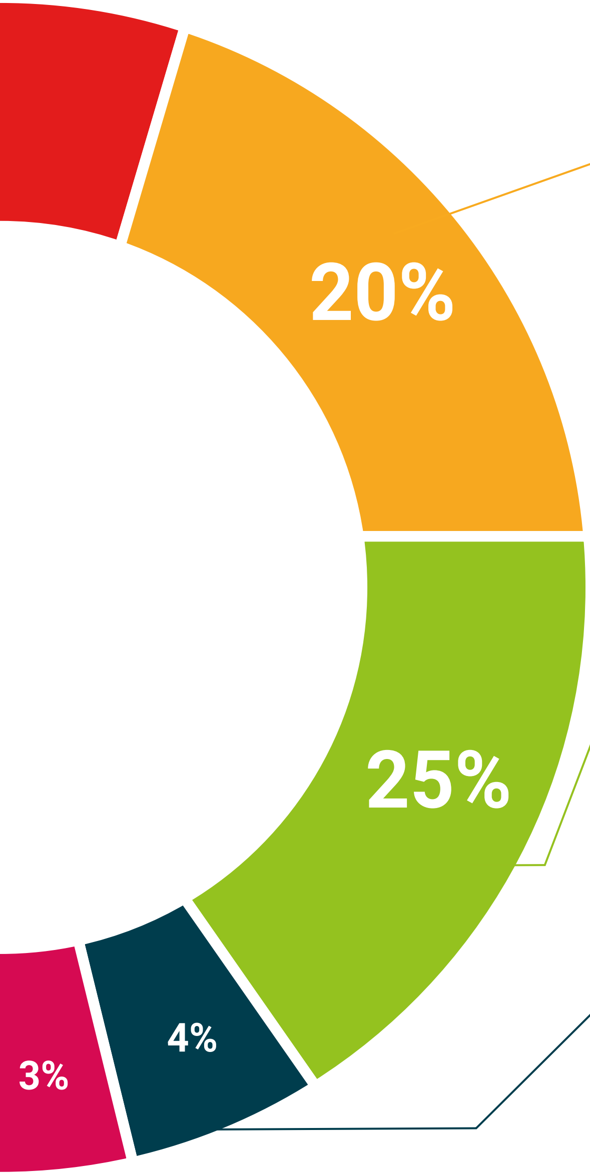
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

Practising Skills and Abilities

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

Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.



Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.

Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.

07

Certificate

The Professional Master's Degree in Renewable Energy guarantees you, in addition to the most rigorous and up-to-date training, access to a Professional Master's Degree issued by TECH Global University.

Successfully complete this program and receive your university degree without travel or laborious paperwork"

This program will allow you to obtain your **Professional Master's Degree diploma in Renewable Energy** 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 2002. 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: **Professional Master's Degree in Renewable Energy**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**

tech global university

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

Professional Master's Degree in Renewable Energy

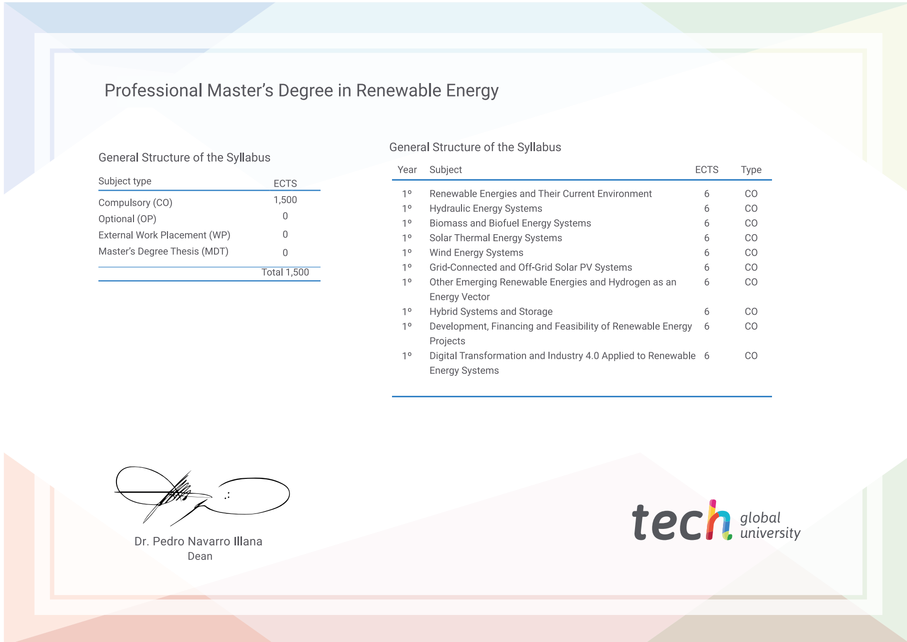
This is a private qualification of 1,500 hours of duration equivalent to 60 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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

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

Dr. Pedro Navarro Illana
Dean

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates



Professional Master's Degree in Renewable Energy

General Structure of the Syllabus

Subject type	ECTS
Compulsory (CO)	1,500
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 1,500

General Structure of the Syllabus

Year	Subject	ECTS	Type
1º	Renewable Energies and Their Current Environment	6	CO
1º	Hydraulic Energy Systems	6	CO
1º	Biomass and Biofuel Energy Systems	6	CO
1º	Solar Thermal Energy Systems	6	CO
1º	Wind Energy Systems	6	CO
1º	Grid-Connected and Off-Grid Solar PV Systems	6	CO
1º	Other Emerging Renewable Energies and Hydrogen as an Energy Vector	6	CO
1º	Hybrid Systems and Storage	6	CO
1º	Development, Financing and Feasibility of Renewable Energy Projects	6	CO
1º	Digital Transformation and Industry 4.0 Applied to Renewable Energy Systems	6	CO

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*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.

Professional Master's Degree
Renewable Energy

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Global University**
- Credits: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Professional Master's Degree
Renewable Energy

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