Postgraduate Certificate

Biomass Utilization Technologies

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Postgraduate Certificate

Biomass Utilization Technologies

- Modality: **online**
- Duration: **6 weeks**
- Certificate: **TECH Technological University**
- Dedication: **16h/week**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/in/engineering/postgraduate-certificate/biomass-utilization-technologies**

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01

Introduction

The chemical Industry is closely linked to environmental conservation strategies. For this reason, many of its advances are related to the promotion of renewable energies, based on organic materials, among other substances. Biomass, one of these resources, has demonstrated its competitiveness in the market due to its evident reduction of greenhouse gas emissions. At this juncture, TECH has created an educational program that will update engineers on all the potential of this substance to obtain various chemical producers and promote a more circular economy. This learning will be supported by a 100% online platform and multimedia resources, designed to promote the development of knowledge in a solid, fast, and flexible way.

A program where you will delve into the sustainable uses of Biomass without hermetic schedules, nor continuous evaluations, from the most complete online learning platform"

Biomass has been integrated into the field of Chemical Engineering as a viable and sustainable solution to promote greater and better care of nature. Their use contributes to the reduction of greenhouse gas emissions and the reduction of dependence on fossil fuels. In addition, it can be converted into biofuels such as ethanol and biodiesel, providing clean alternatives for transportation and industry.

Engineers who want to update their skills in this field will find in this TECH program a cutting-edge training. The program will first cover the most efficient thermochemical, biological, and mechanical conversion methods to obtain energy from Biomass. Furthermore, its application in biorefineries and how to obtain various products and materials from it will be discussed. At the same time, the syllabus will delve into different strategies derived from these techniques to adequately manage agricultural and forestry residues based on a pertinent assessment.

Also, the program will analyze the different trends for the generation of biofuels, molecule platforms, among other advanced contents. All this in correspondence with the approach of the most disruptive technologies and the inclusion of this renewable energy source in the Sustainable Development Goals of the 2030 Agenda.

On the other hand, this Postgraduate Certificate has an innovative 100% online methodology that relies on disruptive systems such as Relearning and case studies. Through its implementation, the students will be able to acquire practical skills for their daily practice. The study materials will be available in different formats such as complementary readings, explanatory videos, interactive summaries, among others. These will be accessible at any place or time through a portable device, connected to the Internet, as desired.

This **Postgraduate Certificate in Biomass Utilization Technologies** contains the most complete and up-to-date program on the market. The most important features include:

- The development of practical cases presented by experts in Chemistry Engineering
- 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

Do not miss the opportunity to complete this program where you will address all the keys to the use of Biomass"

Biorefinery and its conceptual design are some of the most disruptive topics you will examine in this TECH program"

You will master, through this program, the handling, storage, use, and conversion of Biomass.

A 100% online syllabus that puts its contents at your fingertips 24 hours a day, 7 days a week.

The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned specialists from leading 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 education programmed to learn 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 educational year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

Objectives

This TECH program will provide a deep understanding of Biomass Utilization Technologies, focusing also on the main conversion mechanisms. Through their analysis, graduates of this program will be able to expand their theoretical and practical competencies in a fast and flexible way. These, in turn, will enable them to face various professional challenges and difficulties with an exhaustive handling of the most advanced tools and techniques for the development of their practice.

After studying this TECH program, you will have in your hand all the competences to practice with excellence in the Chemical Industry"

General Objectives

- Apply fundamental concepts in the design of chemical products and processes
- Raise awareness of the importance of sustainability in terms of economy, environment, and society
- Evaluate the applicability and potential advantages of new technologies
- Develop a comprehensive view of modern chemical engineering
- Contextualize the importance of biomass in the current framework of sustainable development
- Determine the importance of biomass as an energy resource
- Encourage innovation and creativity in the research processes in Chemical Engineering

Specific Objectives

- Examine the role of biomass in achieving sustainable development goals
- Detail the types of biomass and their composition
- Analyze the advantages of using biomass as an energy resource
- Inspect the different pathways of mechanical, biological, chemical, and thermochemical conversion of biomass
- Determine the importance of biorefinery in the current framework of sustainability
- Examine biofuel generations and assess their feasibility
- Explore routes for biomass valorization
- Evaluate the integral valorization of waste biomass and its impact on the circular economy

In this program you will learn about the different ways of using Biomass as a renewable energy source and its sustainable implications"

03

Course Management

This Postgraduate Certificate, like all TECH programs, has an exceptional faculty. In particular, the specialists in charge of this program have extensive experience in the relationship between the Chemical Industry and the evolution of renewable energies. In addition, these experts have a thorough knowledge of mechanical, biological, chemical, and thermochemical biomass conversion techniques. All of them have contributed to the development of multimedia materials, such as explanatory videos and interactive summaries, to enhance graduates' mastery of cutting-edge sustainable technologies and tools.

The faculty of this program has participated in the development of explanatory videos and other teaching materials for your immediate training"

Management

Dr. Barroso Martín, Isabel

- Expert in Inorganic Chemistry, Crystallography and Mineralogy
- Postdoctoral researcher of the I Own Research and Transfer Plan of the University of Málaga
- Research Staff at the University of Málaga
- ORACLE Programmer in CMV Consultants Accenture
- PhD in Sciences from the University of Málaga
- Master's Degree in Applied Chemistry - specialization in materials characterization - from the University of Málaga
- Master's Degree in SE, High School, Vocational Training, and Language Teaching - specializing in Physics and Chemistry University of Malaga

Professors

Dr. Torres Liñán, Javier

- Expert in Chemical Engineering and Associated technologies
- Specialist in Environmental Chemical Technology
- Collaborator of the Chemical Engineering Department of the University of Málaga
- PhD from the University of Málaga in the PhD program of Chemistry Chemical and Technologies, Materials, and Nanotechnology
- Master's Degree in ESO, High School, Form. Prof. and Language Teaching. Esp. Physics and Chemistry from the University of Málaga
- Master's Degree in Chemical Engineering from the University of Málaga

Dr. Jiménez Gómez, Carmen Pilar

- Technical support staff at the Central Research Services of the University of Málaga
- Laboratory technician assistant at Acerinox
- Laboratory technician in Axaragua
- Predoctoral fellow at the Department of Inorganic Chemistry, Crystallography, and Mineralogy of the University of Málaga
- PhD in Chemical Sciences from the University of Málaga
- Chemical Engineer from the University of Málaga
- Direction of Final Degree Project in Chemical Engineering (2016)
- Teaching collaborator in different degrees: Chemical Engineering, Energy Engineering, and Industrial Organization Engineering at the University of Málaga

Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"

04

Structure and Content

This Postgraduate Certificate emphatically addresses the role of Biomass in the context of the 2030 Agenda for sustainable development. The syllabus includes the handling, storage, and use of this organic matter for energy purposes. It also analyzes its main conversion techniques, including mechanical, biological, chemical, and thermochemical. In addition, the educational itinerary delves into the generation of biofuels and the integral valorization of the waste from these exercises. This program will be taught 100% online from an interactive platform and with a variety of complementary resources, such as explanatory videos and interactive summaries.

You will be able to study this program comfortably, from home, avoiding unnecessary trips to any classroom teaching center"

Module 1. Biomass Utilization Technologies

1.1. 2030 Agenda for Sustainable Development
- 1.1.1. International Energy Agency's Sustainable Development Scenario
- 1.1.2. Sustainable Development Goals of the 2030 Agenda
- 1.1.3. Contribution of the Biomass Sector to the Achievement of the SDGs

1.2. Biomass Uses for Energy Purposes
- 1.2.1. Biomass Manipulation
- 1.2.2. Biomass Storage
- 1.2.3. Use of Biomass for Energy Purposes

1.3. Mechanical Conversion of Biomass
- 1.3.1. Pelletized
- 1.3.2. Extrusion
- 1.3.3. Extraction and Pressing
- 1.3.4. Composites

1.4. Biological Conversion of Biomass
- 1.4.1. Biomass Composting
- 1.4.2. Anaerobic Digestion of Biomass
- 1.4.3. Biomass Hydrolysis

1.5. Chemical Conversion of Biomass
- 1.5.1. Transesterification
- 1.5.2. Solvolysis
- 1.5.3. Application of Chemical Conversion of Biomass: the Paper Industry

1.6. Thermochemicals Conversion of Biomass
- 1.6.1. Combustion
- 1.6.2. Pyrolysis
- 1.6.3. Gasification

1.7. The Biorefinery Conceptual Design
- 1.7.1. The Biorefinery
- 1.7.2. Conceptual Design of a Biorefinery
- 1.7.3. Current Biorefinery Challenges

1.8. Biofuels
- 1.8.1. Biofuel Generations
- 1.8.2. Liquid Biofuels
- 1.8.3. Biocarburants

1.9. Valorization Routes: Obtainment of Platform Molecules
- 1.9.1. Routes for Biomass Valorization
- 1.9.2. Furfural as a Platform Molecule
- 1.9.3. Lignin Derivatives as Precursors of Resins
- 1.9.4. Biopolymers

1.10. Integral Valorization of Residual Biomass
- 1.10.1. Valorization of Animal Residual Biomass
- 1.10.2. Fractionation of Algal Biomass
- 1.10.3. Valorization of By-Products from the Food Industry

Don't wait any longer and enroll! You will master the keys to Biomass utilization through the disruptive methodology of the Relearning system"

05

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

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

Case Study to contextualize all content

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

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

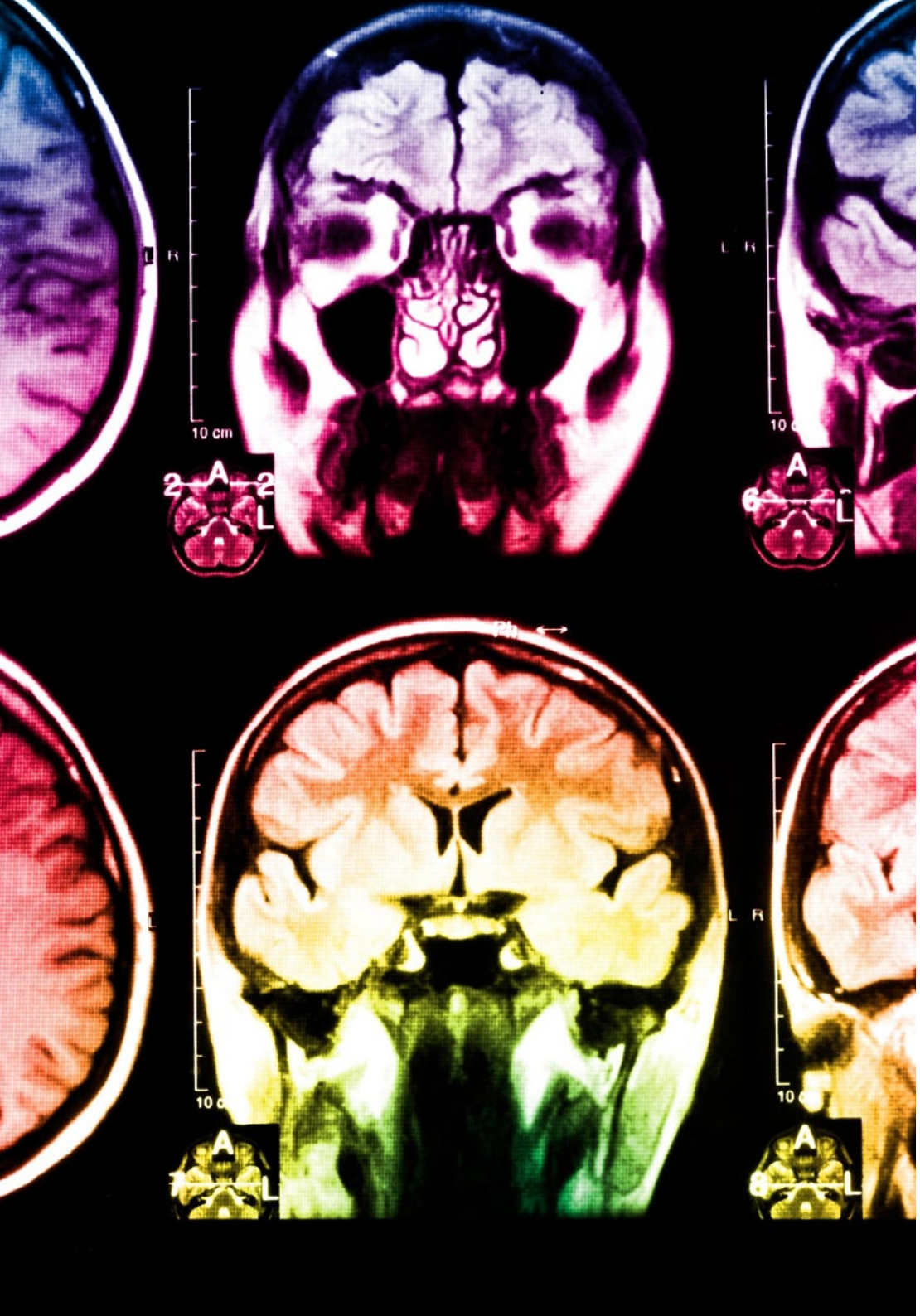
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

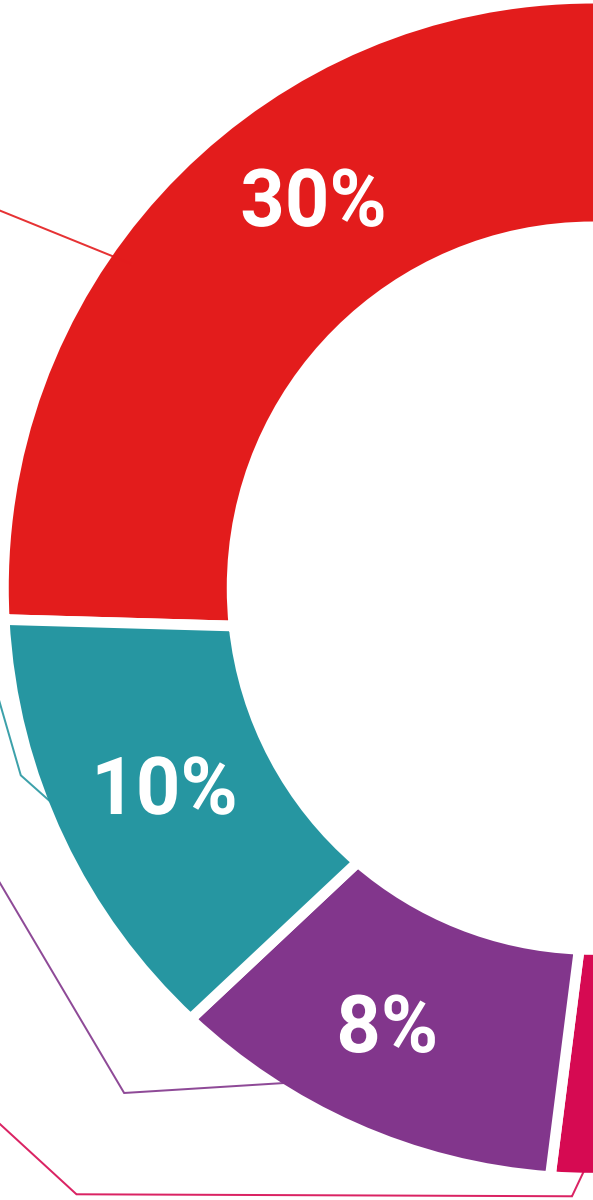
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

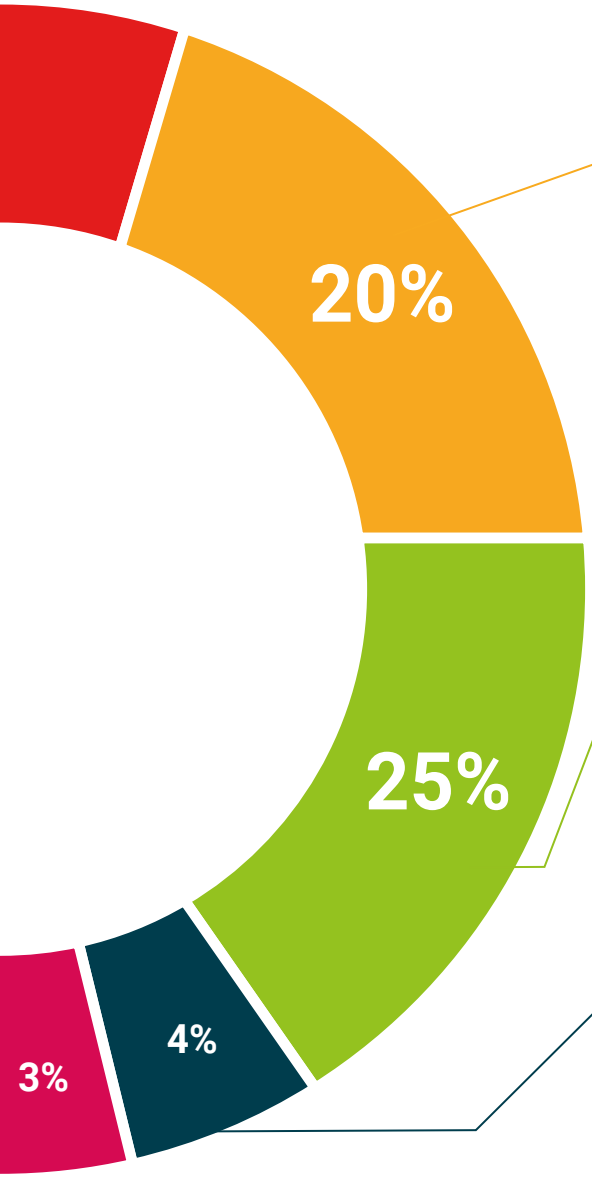
Practising Skills and Abilities

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.

06

Certificate

The Postgraduate Certificate in Biomass Utilization Technologies guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.

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

This **Postgraduate Certificate in Biomass Utilization Technologies** ccontains the most complete and up-to-date program on the market.

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

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

Title: **Postgraduate Certificate in Biomass Utilization Technologies**

Official Nº of Hours: **150 h.**


tech technological university

Awards the following

CERTIFICATE

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Biomass Utilization Technologies

This is a qualification awarded by this University, equivalent to 150 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro

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

*Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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