Postgraduate Certificate
Robotics in Automation of Industrial Processes

tech global university

Postgraduate Certificate
Robotics in Automation
of Industrial Processes

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

Website: **www.techtitute.com/us/information-technology/postgraduate-certificate/robotics-automation-industrial-processes**

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01
Introduction

Industry 4.0 has advanced enormously thanks to Robotics and Machine Vision, which have helped to reduce processing costs and unit production quality. A profitability that is given by the improvement of the technique and the most advanced knowledge on the part of professionals, including IT Professionals This 100% online program delves into the automation of industrial processes through a syllabus with a theoretical-practical approach, which provides the most advanced and up-to-date knowledge of the moment. An ideal option for students who wish to prosper in a booming technological sector.

This Postgraduate Certificate will add to your professional career. Sign up and become an expert in robots in industrial processes"

This program oriented to IT professionals will enable you to acquire comprehensive knowledge in the field of Industrial Process Automation through a specialized teaching team with extensive experience in the field of Robotics.
An education designed for the students who wish to prosper in a sector that demands and values professionals with deep knowledge in this area.

In this program, students will learn the techniques and steps necessary to design and implement a complete automation solution in electrical design, focusing on the calculations, considerations and equipment necessary for the construction of an electrical panel.

Likewise, the IT professionals will delve into the most modern communication networks, architectures and solutions in industrial applications. In addition, and thanks to the multimedia content of this program, students will delve into the design of automatisms in a more friendly way, will develop the most convenient systems of actions and immerse themselves in PLC programming, the real brain within the Industrial Automation and indispensable knowledge in this field.

An excellent opportunity offered by TECH for the IT professionals who wish to progress in their career with a Postgraduate Certificate that allows them to comfortably access all the syllabus from any electronic device with internet access. In this way, students can progress in their career combining a quality program without neglecting their professional and/or personal responsibilities.

This **Postgraduate Certificate in Robotics in Automation of Industrial Processes** contains the most complete and up-to-date program on the market. The most important features include:

- Development of case studies presented by experts in robotic 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

A program that gives you the opportunity to take a step further in the field of Robotics"

"Click and enroll in a Postgraduate Certificate that will introduce you to the programming of the main sensors and actuators in Robotics and automation"

Access all the most up-to-date topics in industrial robotics with your Tablet or cell phone with internet connection.

Delve into the design of pneumatic and hydraulic installations in automation thanks to this 100% online program.

The program includes, in its teaching staff, professionals from the sector who bring to this program the experience of their work, in addition to recognized specialists from prestigious reference societies and universities.

Its 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 an immersive education programmed to learn in real situations.

This program's design focuses on Problem-Based Learning, through which the professional must try to solve the different professional practice situations that arise during the academic program. For this purpose, it will be aided by an innovative system of interactive videos produced by renowned experts.

Objectives

The main goal of this Postgraduate Certificate is to enable the IT professionals to achieve their career progression thanks to a program in which they will delve into the automation of industrial processes. A program that will allow them to propose machine safety standards in its correct design or the development of clean and efficient programming techniques in PLC. All of this with the most up-to-date content in this field and with a specialized teaching team that will guide you to achieve the goals of the students.

*A 100% online program where you will employ clean and efficient programming techniques in the industry"*

General Objectives

- Develop the theoretical and practical foundations necessary to carry out a robot design and modeling project
- Provide the graduates with an exhaustive knowledge of the automation of industrial processes that will allow them to develop their own strategies
- Acquire the professional skills of an expert in automatic control systems in Robotics

Enroll now in an online program that will enable you to program and configure PLC programmable logic controllers in an optimal way"
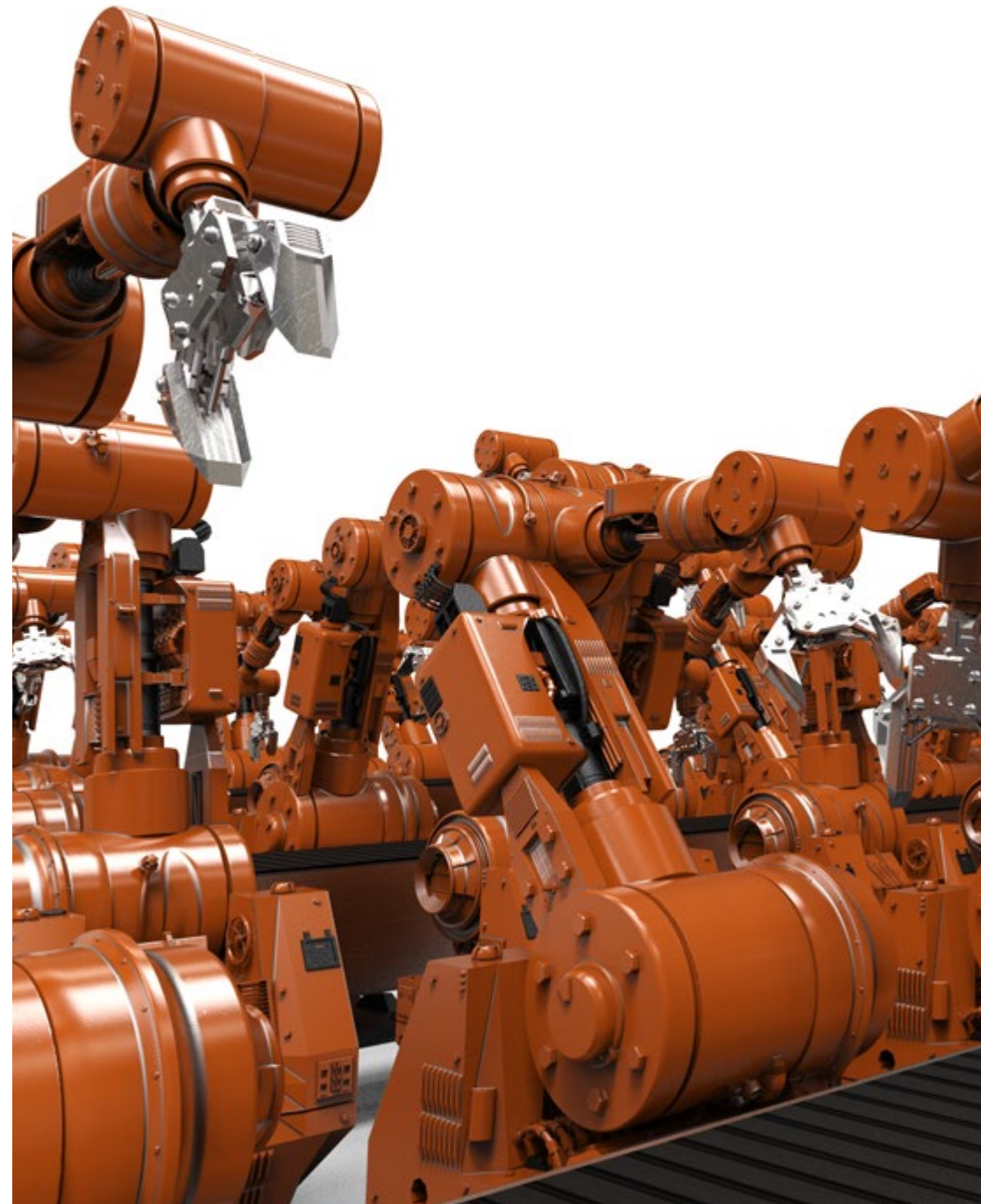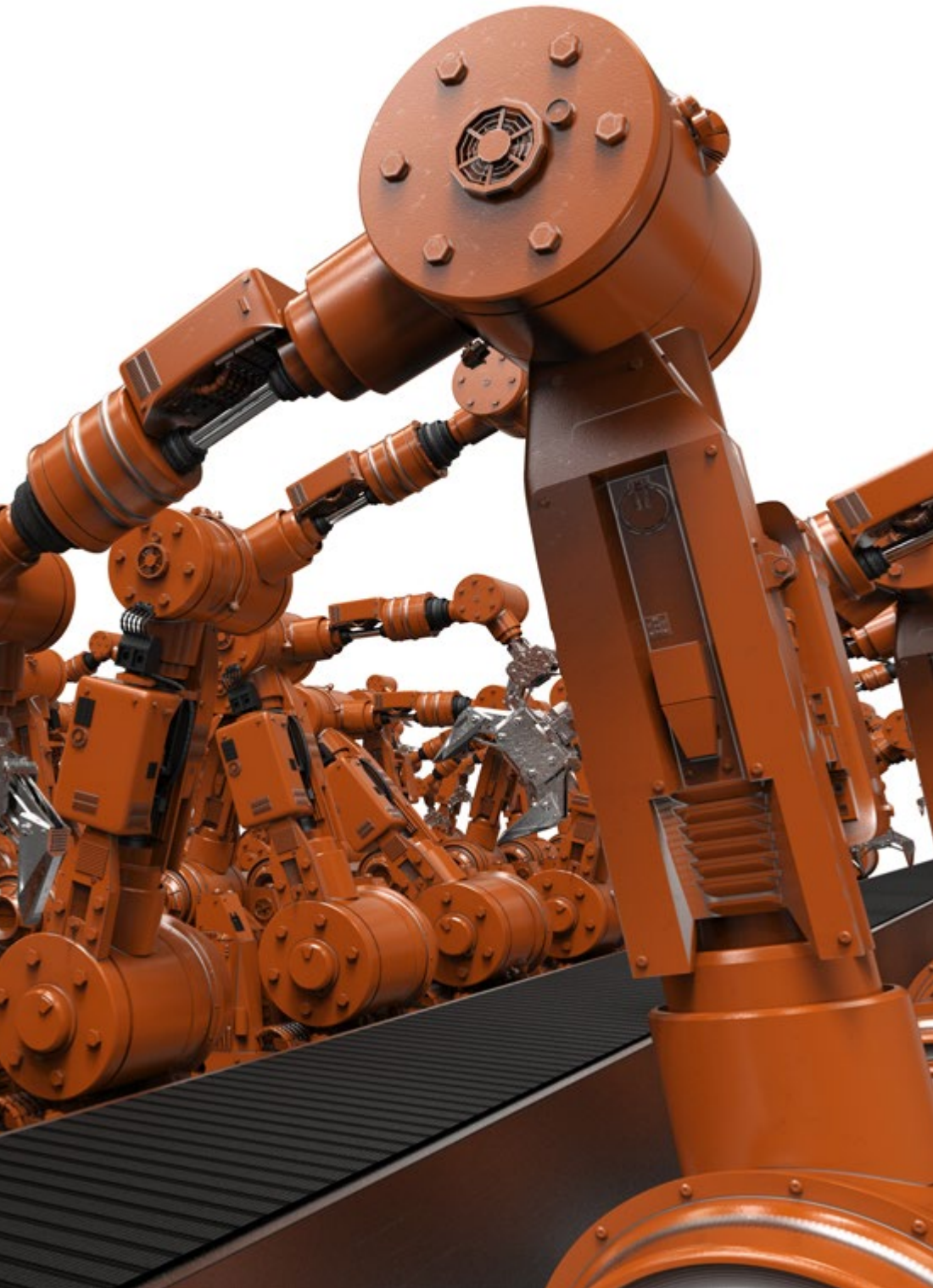
Specific Objectives

- Analyze the use, applications and limitations of industrial communication networks
- Establish machine safety standards for correct design
- Develop clean and efficient programming techniques in PLCs
- Propose new ways of organizing operations using state machines
- Demonstrate the implementation of control paradigms in real PLC applications
- Fundamentalize the design of pneumatic and hydraulic installations in automation
- Identify the main sensors and actuators in robotics and automation

Course Management

In this Postgraduate Certificate, the IT professionals have a management and teaching staff with extensive experience in the field of Robotics and a high qualification in Engineering. Their deep knowledge in this area will be key to the progress of students in this program and its direct application in the professional field. Likewise, the human quality and proximity of the faculty will favor the learning process in a sector that in recent years has been demanding highly qualified personnel.

An experienced teaching team will accompany you in this program so that you can prosper in the Robotics field"

Management

Dr. Ramón Fabresse, Felipe

- Senior Software Engineer at Acurable
- NLP Software Engineer at Intel Corporation
- Software Engineer in CATEC, Indisys
- Researcher in Aerial Robotics at the University of Seville
- PhD Cum Laude in Robotics, Autonomous Systems and Telerobotics at the University of Seville
- Degree in Computer Engineering at the University of Seville
- Master's Degree in Robotics, Automation and Telematics at the University of Seville

Professors

Mr. Rosado Junquera, Pablo J.

- Engineer Specialist in Robotics and Automatization
- R&D Automation and Control Engineer at Becton Dickinson & Company
- Amazon Logistic Control Systems Engineer at Dematic
- Automation and Control Engineer at Aries Ingeniería y Sistemas
- Graduate in Energy and Materials Engineering at Rey Juan Carlos University
- Master's Degree in Robotics and Automation at the Polytechnic University of Madrid
- Master's Degree in Industrial Engineering at the University of Alcalá

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Structure and Content

Throughout the 6 weeks of this course, the IT professionals will have access to a syllabus developed by a teaching team specialized in the field of Robotics and Engineering. Thanks to their extensive knowledge, students will acquire the latest knowledge in Industrial Process Automation. The multimedia resource library consisting of video summaries, specialized readings and case study examples will be very useful for students seeking the most complete learning. Likewise, the Relearning system applied by TECH in all its programs will favor the reduction of long hours of study by implementing a method in which teaching is acquired in a more natural and progressive way.

This Postgraduate Certificate brings you the most advanced electrical design in industrial automation. Enroll now"

Module 1. Robotics in the Automation of Industrial Processes

1.1.   Design of Automated Systems

    1.1.1.   Hardware Architectures

    1.1.2.   Programmable Logic Controllers

    1.1.3.   Industrial Communication Networks

1.2.   Advanced Electrical Design I: Automation

    1.2.1.   Design of Electrical Panels and Symbology

    1.2.2.   Power and Control Circuits Harmonics

    1.2.3.   Protection and Grounding Elements

1.3.   Advanced Electrical Design II: Determinism and Safety

    1.3.1.   Machine Safety and Redundancy

    1.3.2.   Safety Relays and Triggers

    1.3.3.   Safety PLCs

    1.3.4.   Safe Networks

1.4.   Electrical Actuation

    1.4.1.   Motors and Servomotors

    1.4.2.   Frequency Inverters and Controllers

    1.4.3.   Electrically Actuated Industrial Robotics

1.5.   Hydraulic and Pneumatic Actuation

    1.5.1.   Hydraulic Design and Symbology

    1.5.2.   Pneumatic Design and Symbology

    1.5.3.   ATEX Environments in Automation

1.6.   Transducers in Robotics and Automation

    1.6.1.   Position and Velocity Measurement

    1.6.2.   Force and Temperature Measurement

    1.6.3.   Presence Measurement

    1.6.4.   Vision Sensors

1.7.   Programming and Configuration of Programmable Logic Controllers PLCs

    1.7.1.   PLC Programming: LD

    1.7.2.   PLC Programming: ST

    1.7.3.   PLC Programming: FBD and CFC

    1.7.4.   PLC Programming: SFC

Acquire the most advanced knowledge in the simulation of automatisms and plants with this Program"

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 has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. 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 course, students 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 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.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

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.

30%

10%

8%

20%

25%

4%

3%

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 Robotics in Robotics in Automation of Industrial Processes guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.

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

This program will allow you to obtain your **Postgraduate Certificate in Automation of Industrial Processes** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra (*official bulletin*). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Robotics in Automation of Industrial Processes**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**

tech global university

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

Postgraduate Certificate in Cloud Automation of Industrial Processes

This is a program of 180 hours of duration equivalent to 6 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
Rector

Unique TECH Code: AFWORD23S   techtitute.com/certificates

*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.

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