

# Postgraduate Certificate Industry 4.0 Automation Systems





## Postgraduate Certificate Industry 4.0 Automation Systems

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

Website: [www.techtute.com/us/information-technology/postgraduate-certificate/industry-4-0-automation-systems](http://www.techtute.com/us/information-technology/postgraduate-certificate/industry-4-0-automation-systems)

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# 01

# Introduction

Automation Systems 4.0 have become, nowadays, an excellent tool to monitor industrial procedures and limit the need for human action for them to develop properly. Since this leads to a significant increase in business productivity, these technologies are in great demand by companies, in this way providing high job prospects for IT specialists in their creation and implementation. For this reason, TECH has designed this program, through which the student will master the basics of industrial robotics or delve into the implementation of Lean Manufacturing in production tasks. All this, following a 100% online methodology that will enable you to combine your personal and professional life with an excellent learning experience.



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*The Postgraduate Certificate in Industry 4.0 Automation Systems will allow you to delve into the strategies to implement Lean Manufacturing in the factory, in order to optimize production"*

Through the Industrial Internet of Things, Automation Systems 4.0 allow to control and monitor appliances, devices and machines involved in industrial production processes in real time. In this way, their proper programming enables automatic operation of all these elements, which has a positive impact on the reduction of working times and minimization of production costs. All these excellent advantages provided in the industrial field highlight the relevance of the IT specialists in this type of technology, as they play a crucial role in its development.

This is why TECH has opted to create this Postgraduate Certificate, through which the student will acquire the most relevant knowledge in terms of Industry 4.0 Automation System to boost their professional success in a sector in continuous growth and high demand. During 180 intensive learning hours, you will detect the most common robotics models and analyze their impact on different industrial processes. Also, you will be able to establish the particularities of the different types of actuators or delve into the main keys to carry out a correct predictive maintenance.

All this, through a completely online methodology, which will allow the computer scientist to enjoy effective learning through the development of their own study schedules. In addition, this program is designed, carried out and taught by the best specialists in the field of industrial automation. Therefore, all the knowledge that the student will assimilate will be fully applicable in their professional experiences.

This **Postgraduate Certificate in Industry 4.0 Automation Systems** 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 technological solutions
- ◆ The graphic, schematic, and practical contents with which they are created, provide 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



*Get the possibility to combine your excellent learning with your personal and professional obligations through all the study facilities that TECH offers you"*

“

*With this program, you will determine which are the most common robotics models in Industry 4.0, as well as analyze their impact on different industrial processes”*

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.

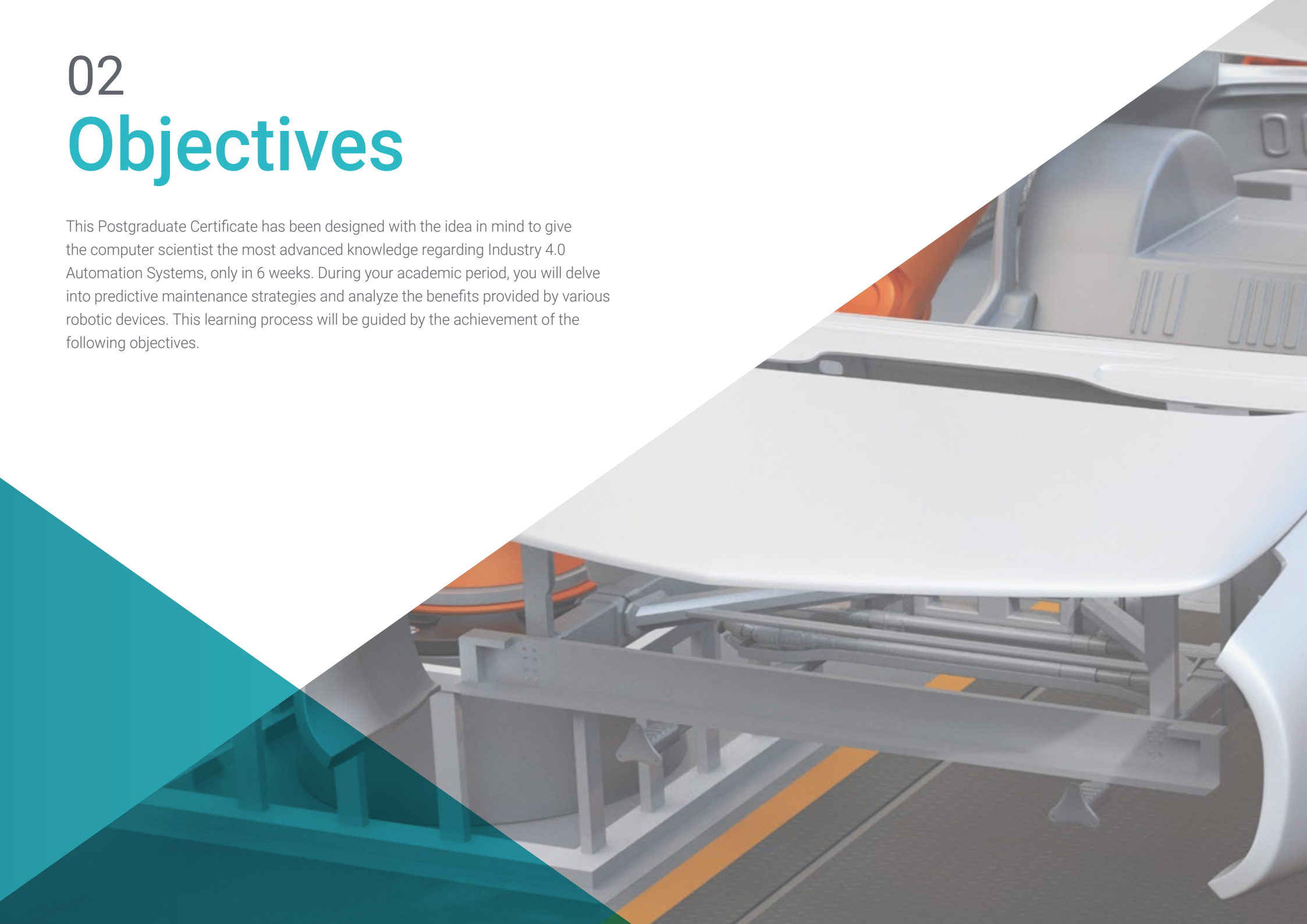
*Study from anywhere in the world thanks to the completely online delivery of this program.*

*Identify, with this program, the main keys to carry out a correct predictive maintenance.*



# 02 Objectives

This Postgraduate Certificate has been designed with the idea in mind to give the computer scientist the most advanced knowledge regarding Industry 4.0 Automation Systems, only in 6 weeks. During your academic period, you will delve into predictive maintenance strategies and analyze the benefits provided by various robotic devices. This learning process will be guided by the achievement of the following objectives.







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*Adopt the most up-to-date knowledge on Industry 4.0 Automation Systems and boost your job opportunities in this field”*



## General Objectives

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- ◆ Conduct a comprehensive analysis of the profound transformation and radical paradigm shift being experienced in the current global digitalization process
- ◆ Provide in-depth knowledge and the necessary technological tools to face and lead the technological leap and the challenges currently present in companies
- ◆ Mastering the digitalization procedures of companies and the automation of their processes to create new fields of wealth in areas such as creativity, innovation and technological efficiency
- ◆ Leading Digital Change





## Specific Objectives

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- ◆ Conduct an exhaustive analysis of the practical application that emerging technologies are having in the different economic sectors and in the value chain of their main industries
- ◆ In-depth knowledge of the primary and secondary economic sectors, as well as the technological impact they are experiencing
- ◆ Find out how technologies are revolutionizing the agricultural, livestock, industrial, energy and construction sectors



*Develop the objectives that TECH has outlined for this program and become a reference professional linked to Industry 4.0"*

# 03

# Course Management

In order to maintain intact the exquisite educational quality of TECH's programs, this Postgraduate Certificate has a teaching staff made up of the best active specialists in industrial automation and technological solutions. These professionals are responsible for the elaboration of the didactic contents that the computer scientist will enjoy during the duration of this program. As a result, all the knowledge you will assimilate will be completely up-to-date.



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*Together with leading experts in the field of Industry 4.0, you will acquire a range of knowledge about Automation Systems that will enable you to grow as a professional”*

## Management



### Mr. Segovia Escobar, Pablo

- ♦ Chief Executive of the Defense Sector in the Company Tecnobit of the Oesía Group
- ♦ Project Manager at Indra
- ♦ Master's Degree in Business Administration and Management from the National University of Distance Education
- ♦ Postgraduate in Strategic Management Function
- ♦ Member of: Spanish Association of People with High Intellectual Quotient



### Mr. Diezma López, Pedro

- ♦ Chief Innovation Officer and CEO of Zerintia Technologies
- ♦ Founder of the technology company Acuilae
- ♦ Member of the Kebala Group for the incubation and promotion of businesses
- ♦ Consultant for technology companies such as Endesa, Airbus or Phone
- ♦ Wearable "Best Initiative" Award in eHealth 2017 and "Best Technological "Solution" 2018 for occupational safety



## Professors

### Mr. Castellano Nieto, Francisco

- ◆ Head of the Maintenance Area of Indra Company
- ◆ Consultant Collaborator for Siemens AG, Allen-Bradley at Rockwell Automation and other companies
- ◆ Industrial Electronic Engineer from Comillas Pontifical University

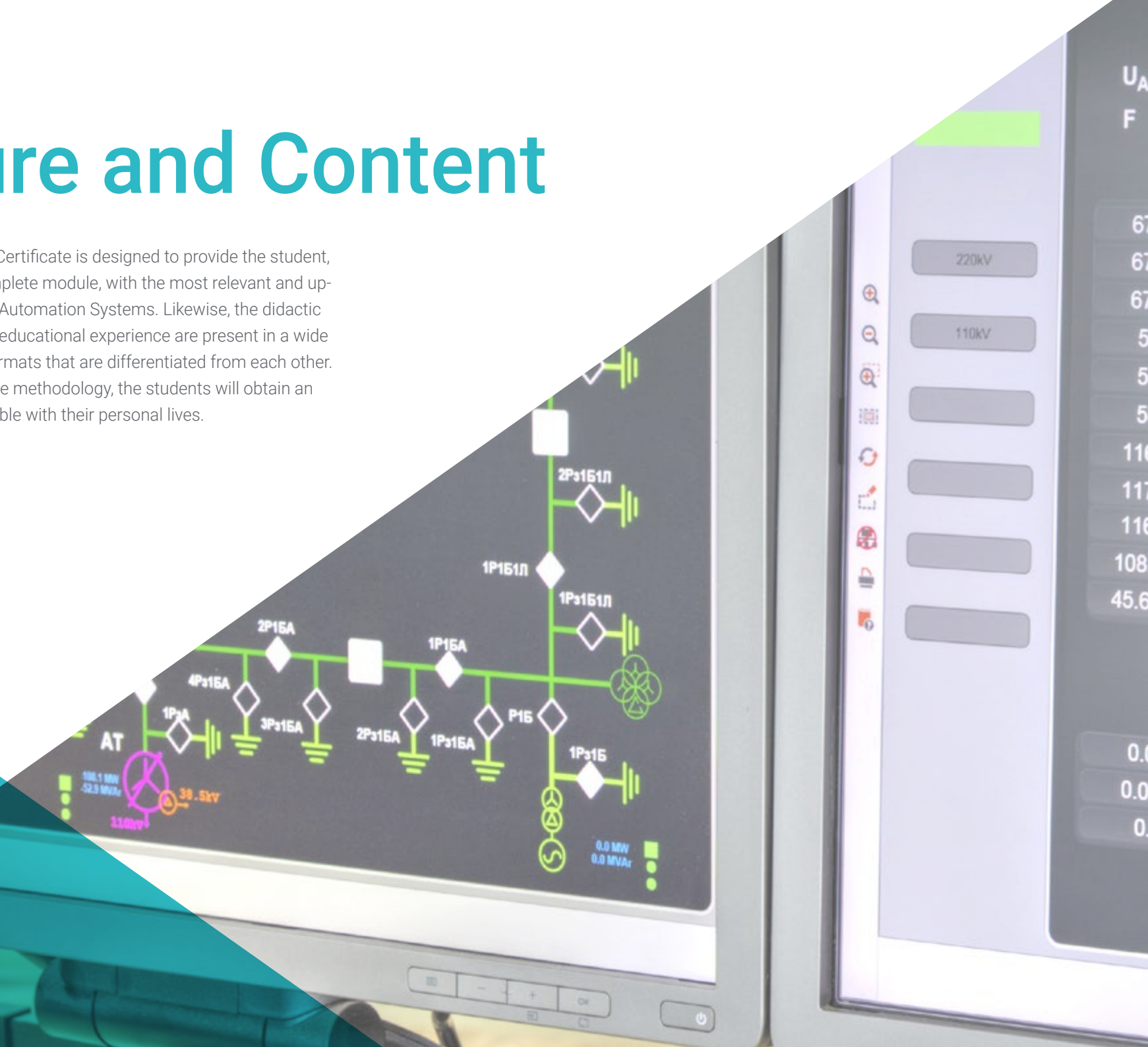
“

*A unique, key, and decisive educational experience to boost your professional development”*

# 04

## Structure and Content

The syllabus of this Postgraduate Certificate is designed to provide the student, through an extensive and very complete module, with the most relevant and up-to-date knowledge on Industry 4.0 Automation Systems. Likewise, the didactic contents available throughout this educational experience are present in a wide range of textual and multimedia formats that are differentiated from each other. With this and through a 100% online methodology, the students will obtain an effective education that is compatible with their personal lives.





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*Enroll in this program and benefit from the most up-to-date teaching resources in the market for Industry 4.0 Automation Systems”*

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## Module 1. Industry 4.0 Automation Systems

- 1.1. Industrial Automation
  - 1.1.1. Automization
  - 1.1.2. Architecture and Components
  - 1.1.3. Safety
- 1.2. Industrial Robotics
  - 1.2.1. Fundamentals of Industrial Robotics
  - 1.2.2. Models and Impact on Industrial Processes
- 1.3. PLC Systems and Industrial Control
  - 1.3.1. PLC Evolution and Status
  - 1.3.2. Evolution of Programming Languages
  - 1.3.3. Computer Integrated Automation CIM
- 1.4. Sensors and Actuators
  - 1.4.1. Classification of Transducers
  - 1.4.2. Types of Sensors
  - 1.4.3. Standardization of Signals
- 1.5. Monitor and Manage
  - 1.5.1. Types of Actuators
  - 1.5.2. Feedback Control Systems
- 1.6. Industrial Connectivity
  - 1.6.1. Standardized Fieldbuses
  - 1.6.2. Connectivity
- 1.7. Proactive / Predictive Maintenance
  - 1.7.1. Predictive Maintenance
  - 1.7.2. Fault Identification and Analysis
  - 1.7.3. Proactive Actions Based on Predictive Maintenance





- 1.8. Continuous Monitoring and Prescriptive Maintenance
  - 1.8.1. Prescriptive Maintenance Concept in Industrial Environments
  - 1.8.2. Selection and Exploitation of Data for Self-Diagnostics
- 1.9. Lean Manufacturing
  - 1.9.1. Lean Manufacturing
  - 1.9.2. Benefits of Lean Implementation in Industrial Processes
- 1.10. Industrialized Processes in Industry 4.0. Use Case
  - 1.10.1. Project definition
  - 1.10.2. Technological Selection
  - 1.10.3. Connectivity
  - 1.10.4. Data Exploitation

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*Take the step to get up to speed on the latest developments in Industry 4.0 Automation Systems”*

# 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.





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 Industry 4.0 Automation Systems guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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

This program will allow you to obtain your **Postgraduate Certificate in Industry 4.0 Automation Systems** 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 Industry 4.0 Automation Systems**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



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



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