

# Postgraduate Diploma Communication and Marketing in Electronic Systems Engineering





## Postgraduate Diploma Communication and Marketing in Electronic Systems Engineering

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

Website: [www.techtute.com/pk/engineering/postgraduate-diploma/postgraduate-diploma-communication-marketing-systems-engineering-electronics](http://www.techtute.com/pk/engineering/postgraduate-diploma/postgraduate-diploma-communication-marketing-systems-engineering-electronics)

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# 01

# Introduction

Marketing is a fundamental aspect that must be taken into account in all companies, regardless of the sector in which they operate. These tools help to raise awareness of products, create a brand image and build customer loyalty. Therefore, their use must be carried out with great professionalism in order to be able to compete in highly competitive markets. In order to improve the qualification of engineers in this field, TECH offers them this program on Communication and Marketing in Electronic Systems Engineering, with which they will be able to enter a fundamental sector for their professional development.







“

*Studies in industrial marketing and communications will help you to be more competitive in your daily practice, gaining access to relevant positions in the sector”*

Industrial markets are becoming increasingly complex and competitive. They operate in globalized environments where differentiation is difficult, with increasingly well-informed and demanding customers, with reduced product and service life cycles, and with constant innovation processes. Therefore, companies in the sector must seek differentiation through other tools, thanks to which they are able to achieve customer loyalty and, therefore, move in an environment of permanent growth. That is why the Postgraduate Diploma in Communication and Marketing in Electronic Systems Engineering is increasingly demanded by electronic engineers.

TECH has devised this Postgraduate Diploma in order to solve an academic need of professionals in the sector, who demand specific programs on Communication and Marketing in Electronic Systems Engineering with which to gain a position in a highly competitive market. For this purpose, it has selected the best faculty of the moment, who have created this very complete program, in which specialized knowledge is developed on the creation of communication networks, a key element for the transfer of data between all the elements of an industrial production system, and which is the basis of what is known as Industry 4.0. Furthermore, the program covers Marketing, as a great instrument of value creation for the industrial company, besides being a key element for its competitiveness in the current environment.

A 100% online Postgraduate Diploma that will allow students to distribute their study time, not being conditioned by fixed schedules or the need to move to another physical location, being able to access all the contents at any time of the day, and therefore able to balance their work and personal life with their academic life. These are the features needed by 21st century students, who combine the improvement of their academic qualification with their professional facet.

This **Postgraduate Diploma in Communication and Marketing in Electronic Systems Engineering** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ Case studies presented by experts in Electronics 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 the self-assessment process can be carried out to improve learning
- ◆ Special emphasis on innovative methodologies in Electronic Systems Engineering
- ◆ 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



*Marketing is an indispensable part of any industry, so higher qualification in this field will be indispensable for electronic engineers”*

“*A top-level program that will open doors to an exciting field of electronics*”

*The multitude of practical exercises that you will be able to carry out in this Postgraduate Diploma will be fundamental to enhance your theoretical knowledge.*

*Study with the most innovative didactic methodology in the current academic market.*

Its teaching staff includes professionals from the field of engineering, who contribute their work experience to this program, as well as renowned specialists from leading companies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow professionals to learn in a contextual and situated learning environment, i.e., a simulated environment that will provide immersive specialization for real situations.

This program is designed around Problem-Based Learning, where professionals must try to solve the different professional practice situations that arise throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.



# 02

# Objectives

Through this TECH program, engineers will be able to specialize in Communication and Marketing in Electronic Systems Engineering. A step forward in their qualification that will open the doors to a successful job market, increasing their knowledge in different aspects such as power electronic converters, industrial communications or specific Marketing for this field. Certainly, this is a very complete academic program that will lay the foundations for quality professional development in the students.





“

*Achieve your academic goals  
and become an industrial  
communications professional”*



## General Objectives

- ◆ Determine the need for power electronic converters in most real-world applications
- ◆ Analyze the different types of converters that can be found, based on their function
- ◆ Design and implement power electronic converters according to the need of use
- ◆ Analyze and simulate the behavior of the most commonly used electronic converters in electronic circuits
- ◆ Determine the characteristics of real type systems and recognize the complexity of programming these types of systems
- ◆ Analyze the different types of communication networks available
- ◆ Assess which type of communications network is the most suitable in certain scenarios
- ◆ Determine the keys to effective marketing in the industrial marketplace
- ◆ Develop commercial management to create profitable and long-lasting relationships with customers
- ◆ Generate specialized knowledge to compete in a globalized and increasingly complex environment
- ◆ Analyze the operation of a Tunnel Control Center and how the different incidents are managed
- ◆ Know in detail the structure of the Operation Manual and the actors involved in tunnel operation
- ◆ Break down the conditions for defining the minimum conditions under which a tunnel can be operated, and how to establish the associated methodology for fault resolution
- ◆ In-depth understanding of BIM methodology and how to apply it to each phase: design, construction and maintenance and operation
- ◆ Make a comprehensive analysis of the most current trends in terms of society, environment and technology: connected vehicle, autonomous vehicle, Smart - Roads
- ◆ Have a firm grasp on the possibilities that some technologies are offering. In this way, combined with the student's experience, it can be the perfect alliance when designing the actual application or improving existing processes





## Specific Objectives

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### Module 1. Power Electronic Converters

- ◆ Analyze the converter function, classification and characteristic parameters
- ◆ Identify real applications that justify the use of power electronic converters
- ◆ Approach the analysis and study of the main converter circuits: rectifiers, inverters, switched-mode converters, voltage regulators and cycloconverters
- ◆ Analyze the different figures of merit as a measure of quality in a converter system
- ◆ Determine the different control strategies and the improvements provided by each of them
- ◆ Examine the basic structure and components of each of the converter circuits
- ◆ Develop performance requirements for generating specialized knowledge in order to be able to select the appropriate electronic circuit according to the system requirements
- ◆ Propose solutions to the design of power converters

### Module 2. Industrial Communications

- ◆ Establish the basis of real-time systems and their main characteristics in relation to industrial communications
- ◆ Examine the need for distributed systems and their programming
- ◆ Determine the specific characteristics of industrial communications networks
- ◆ Analyze the different solutions for the implementation of a communications network in an industrial environment
- ◆ Gain in-depth knowledge of the OSI communications model and the TCP protocol
- ◆ Develop the different mechanisms to convert this type of networks into reliable networks
- ◆ Address the basic protocols on which the different mechanisms of information transmission in industrial communication networks are based

### Module 3. Industrial Marketing

- ◆ Determine the particularities of marketing in the industrial sector
- ◆ Analyze what a marketing plan is, the importance of planning, setting objectives and developing strategies
- ◆ Examine the different techniques to obtain information and learn from the market in the industrial environment
- ◆ Manage positioning and segmentation strategies.
- ◆ Assess the value of services and customer loyalty
- ◆ Establish the differences between transactional marketing and relationship marketing in industrial markets
- ◆ Value the power of the brand as a strategic asset in a globalized market
- ◆ Apply industrial communication tools
- ◆ Determine the different distribution channels of industrial companies in order to design an optimal distribution strategy
- ◆ Address the importance of the sales force in industrial markets



*If you are looking for customer loyalty, this program will give you the Marketing keys you need to know”*



03

# Course Management

TECH has selected the most prestigious faculty members in the field of electronic systems engineering to carry out this Postgraduate Diploma. A large team of professionals with extensive professional experience, as well as teaching and research experience, who are committed to quality education as the main method for the specialization of engineers in this field. Certainly, the best faculty with which to enter an exciting sector.





A close-up photograph of a metal gear, showing the teeth and the circular body. The gear has a brushed metal finish and is set against a dark background. The lighting highlights the texture of the metal and the sharp edges of the teeth. The image is partially obscured by a large, diagonal white and orange graphic overlay.

“

*A top-level program designed by the most prestigious faculty in the field”*

## Management



### Ms. Casares Andrés, María Gregoria

- ♦ Associate Professors, Carlos III University of Madrid
- ♦ Degree in IT Polytechnic University of Madrid
- ♦ Research Sufficiency Polytechnic University of Madrid
- ♦ Research Sufficiency, Carlos III University of Madrid
- ♦ Evaluator and Creator of OCW courses at Carlos III University of Madrid
- ♦ INTEF courses tutor
- ♦ Support Technician, Ministry of Education Directorate General of Bilingualism and Quality of Education of the Community of Madrid
- ♦ Secondary Education Professor with specialty in IT
- ♦ Associate professor at the Pontificia de Comillas University
- ♦ Postgraduate Diploma in Teaching Unit, Community of Madrid
- ♦ Analyst/ IT Project manager, Banco Urquijo
- ♦ IT Analyst at ERIA



## Professors

### Mr. De la Rosa Prada, Marcos

- ◆ Teacher of Vocational Training Cycles, Ministry of Education of the Community of Madrid
- ◆ Consultant at Santander Technology
- ◆ New Technologies Agent in Badajoz
- ◆ Author and content editor at CIDEAD (General Secretariat for Vocational Training - Ministry of Education and Vocational Training).
- ◆ Telecommunications Engineer from the University of Extremadura
- ◆ Scrum Foundation Expert Certificate by EuropeanScrum.org
- ◆ Certificate in Pedagogical Aptitude, University of Extremadura

### Ms. Millán Varela, Lorena

- ◆ Research Support Technician at the project as Learning from: "System for the provision and consumption of HD multimedia content in means of collective passenger transport based on LIFI technology for data transmission". Carlos University of Madrid
- ◆ Specialist in Computer Science, at Emprestur, Ministry of Tourism, Cuba
- ◆ Specialist in Computer Science at UNE, Empresa Eléctrica, Cuba
- ◆ IT and Communications Specialist, Almacenes Universales S.A., Cuba
- ◆ Radio Communications Specialist at Santa Clara Air Base, Cuba
- ◆ Telecommunications and Electronics Engineering at Universidad Central "Marta Abreu" of las Villas, Santa Clara, Cuba
- ◆ Master's Degree in Political and Electoral Analysis from the Carlos III University, Madrid: Leganés Campus, Madrid
- ◆ PhD student in Electrical, Electronic and Automation Engineering, Department of Electronic Technology. Carlos III University of Madrid: Leganés Campus



# 04

# Structure and Content

The syllabus of this TECH Postgraduate Diploma has been designed by a team of experts in the field with the main objective of offering the best content to engineering professionals. For this purpose, the program covers three comprehensive modules, ranging from power converters to marketing and industrial communications. Three truly fundamental aspects for those who wish to acquire a higher qualification in this field.







“

*A very complete syllabus in which you can find all the news about Communication and Marketing in Electronic Systems Engineering”*

## Module 1. Power Electronic Converters

- 1.1. Power Converter
  - 1.1.1. Power Electronics
  - 1.1.2. Applications of Power Electronics
  - 1.1.3. Power Conversion Systems
- 1.2. Converters
  - 1.2.1. Converters
  - 1.2.2. Types of Converters
  - 1.2.3. Characteristic Parameters
  - 1.2.4. Fourier Series
- 1.3. AC/DC Conversion. Single-Phase Uncontrolled Rectifiers
  - 1.3.1. AC/DC Converters
  - 1.3.2. Diode
  - 1.3.3. Uncontrolled Half-Wave Rectifier
  - 1.3.4. Full-Wave Uncontrolled Rectifier
- 1.4. AC/DC Conversion. Single-Phase Controlled Rectifiers
  - 1.4.1. Thyristor
  - 1.4.2. Half-Wave Controlled Rectifier
  - 1.4.3. Full-Wave Controlled Rectifier
- 1.5. Three-Phase Rectifiers
  - 1.5.1. Three-Phase Rectifiers
  - 1.5.2. Three-Phase Controlled Rectifiers
  - 1.5.3. Three-Phase Uncontrolled Rectifiers
- 1.6. DC/AC Conversion. Single-Phase Inverters
  - 1.6.1. DC/AC Converters
  - 1.6.2. Single-Phase Square Wave Controlled Inverters
  - 1.6.3. Single-Phase Inverters Using Sinusoidal PWM Modulation
- 1.7. DC/AC Conversion. Three-Phase Inverters
  - 1.7.1. Three-Phase Inverters
  - 1.7.2. Three-Phase Square Wave Controlled Inverters
  - 1.7.3. Three-Phase Inverters Using Sinusoidal PWM Modulation
- 1.8. DC/DC Conversion
  - 1.8.1. DC/DC Converters
  - 1.8.2. DC/DC Converters Classification
  - 1.8.3. DC/DC Converters Control
  - 1.8.4. Reducing Converter

- 1.9. DC/DC Conversion. Elevating Converter
  - 1.9.1. Elevating Converter
  - 1.9.2. Reducing-Elevating Converter
  - 1.9.3. Cúk Converter
- 1.10. AC/AC Conversion
  - 1.10.1. AC/AC Converters
  - 1.10.2. AC/AC Converters Classification
  - 1.10.3. Voltage Regulators
  - 1.10.4. Cycloconverters

## Module 2. Industrial Communications

- 2.1. The Systems in Real Time
  - 2.1.1. Classification
  - 2.1.2. Programming
  - 2.1.3. Planning
- 2.2. Communication Networks
  - 2.2.1. Transmission Media
  - 2.2.2. Basic Configurations
  - 2.2.3. CIM Pyramid
  - 2.2.4. Classification
  - 2.2.5. OSI Model
  - 2.2.6. TCP/IP Model
- 2.3. Fieldbuses
  - 2.3.1. Classification
  - 2.3.2. Distributed and Centralized Systems
  - 2.3.3. Distributed Control Systems
- 2.4. BUS
  - 2.4.1. Physical Level
  - 2.4.2. Level of Scope
  - 2.4.3. Error Control
  - 2.4.4. Components

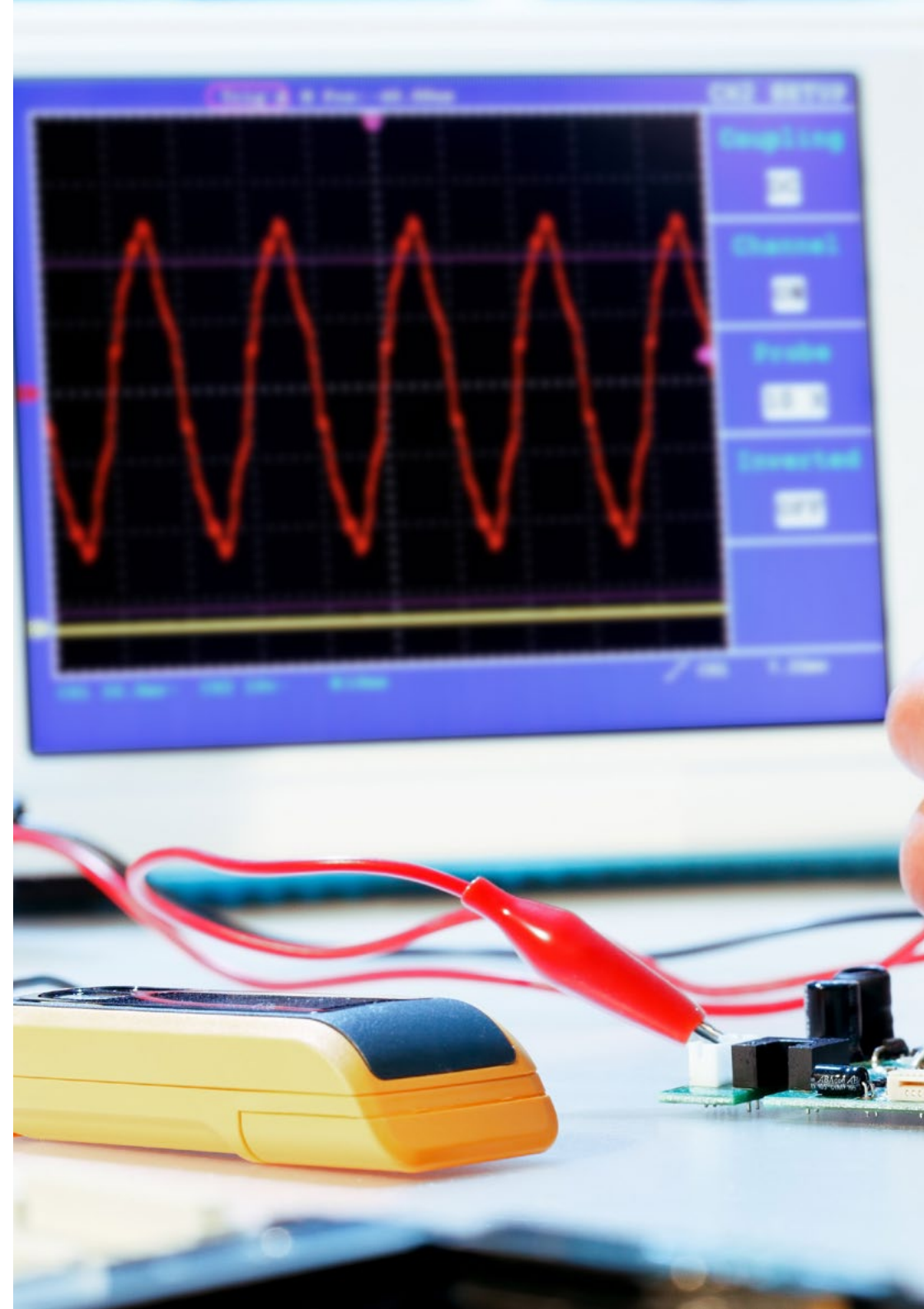
- 2.5. Elements
  - 2.5.1. Physical Level
  - 2.5.2. Level of Scope
  - 2.5.3. Error Control
  - 2.5.4. DeviceNet
  - 2.5.5. ControlNet
- 2.6. Profibus
  - 2.6.1. Physical Level
  - 2.6.2. Level of Scope
  - 2.6.3. Level of Application
  - 2.6.4. Communication Model
  - 2.6.5. Operation System
  - 2.6.6. Profinet
- 2.7. Modbus
  - 2.7.1. Physical Media
  - 2.7.2. Access to the Media
  - 2.7.3. Series Transmission Modes
  - 2.7.4. Protocol
  - 2.7.5. TCP Modbus
- 2.8. Industrial Ethernet
  - 2.8.1. Profinet
  - 2.8.2. TCP Modbus
  - 2.8.3. Ethernet/IP
  - 2.8.4. EtherCAT

- 2.9. Wireless Communication
  - 2.9.1. 802.11 Networks (Wifi)
  - 2.9.2. 802.15.1 Networks (BlueTooth)
  - 2.9.3. 802.15.4 Networks (ZigBee)
  - 2.9.4. WirelessHART
  - 2.9.5. WiMAX
  - 2.9.6. Mobile Phone-Based Networks
  - 2.9.7. Satellite Communications
- 2.10. IoT in Industrial Environments
  - 2.10.1. The Internet of Things
  - 2.10.2. IoT Device Characteristics
  - 2.10.3. Application of IoT in Industrial Environments
  - 2.10.4. Security Requirements
  - 2.10.5. Communication Protocols: MQTT and CoAP

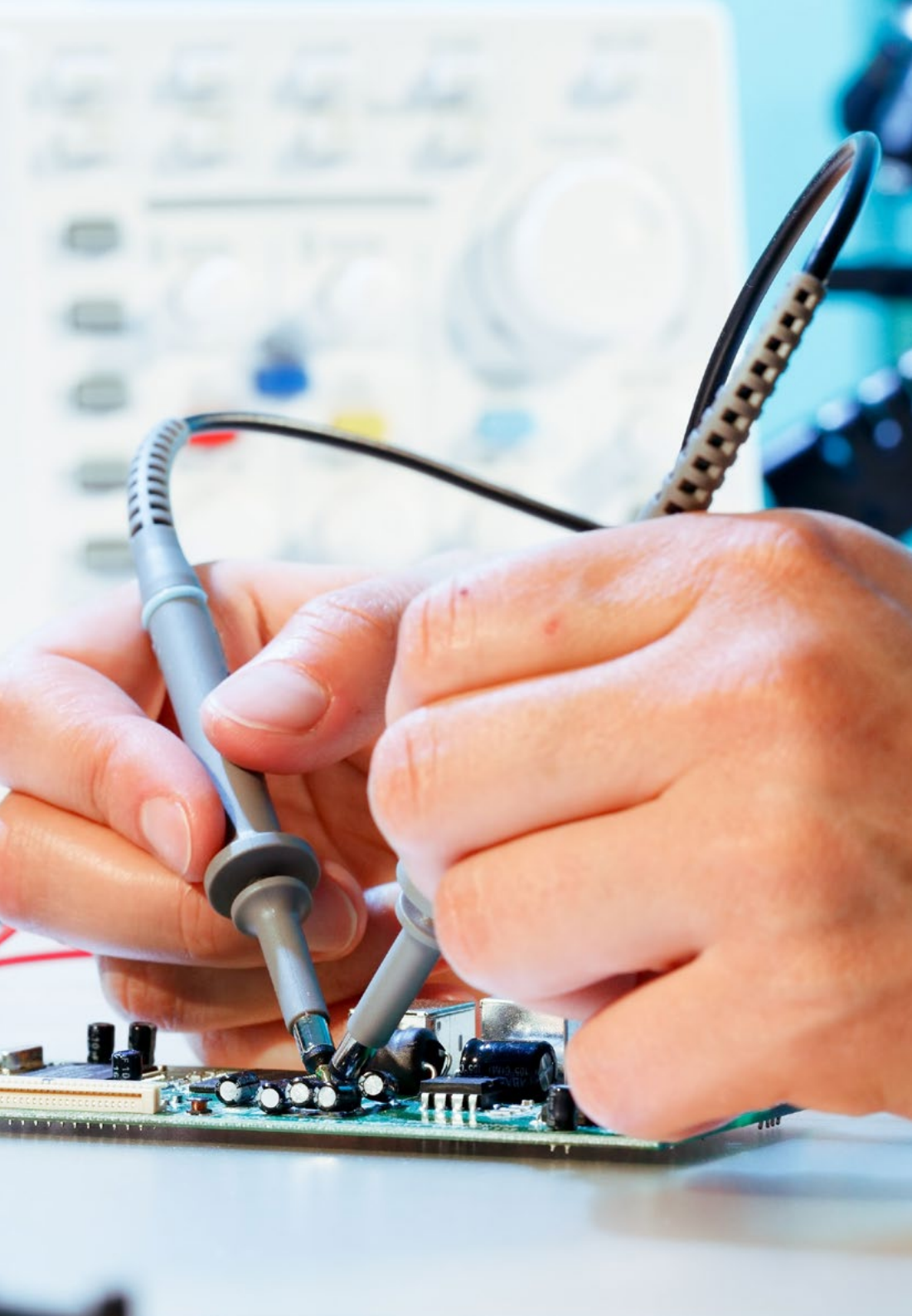
### Module 3. Industrial Marketing

- 3.1. Marketing and Analysis of the Industrial Market
  - 3.1.1. Marketing
  - 3.1.2. Understanding the Market and Customer Guidance
  - 3.1.3. Differences Between Industrial Marketing and Consumer Marketing
  - 3.1.4. Industrial Market
- 3.2. Marketing Planning
  - 3.2.1. Strategic Planning
  - 3.2.2. Analysis of the environment
  - 3.2.3. Business Mission and Objectives
  - 3.2.4. The Marketing Plan in Industrial Companies
- 3.3. Managing the Marketing Information
  - 3.3.1. Knowledge of the Client in the Industrial sector
  - 3.3.2. Learning from the Market
  - 3.3.3. MIS (Marketing Information System)
  - 3.3.4. Commercial Research

- 3.4. Marketing Strategies
  - 3.4.1. Segmentation.
  - 3.4.2. Evaluation and Choice of Target Market
  - 3.4.3. Differentiation and Positioning
- 3.5. Marketing Relations in the Industrial sector
  - 3.5.1. Creating Relationships
  - 3.5.2. From Transactional Marketing to Relationship Marketing
  - 3.5.3. Design and Implementation of an Industrial Relational Marketing Strategy
- 3.6. Value Creation in the Industrial Market
  - 3.6.1. Marketing Mix and Offering
  - 3.6.2. Advantages of Inbound Marketing in the Industrial Sector
  - 3.6.3. Value Proposal in the Industrial Market
  - 3.6.4. Industrial Purchasing Process
- 3.7. Pricing policies
  - 3.7.1. Pricing Policies
  - 3.7.2. Objectives of Pricing Policies
  - 3.7.3. Pricing strategies
- 3.8. Communication and Branding in the Industrial Sector
  - 3.8.1. Branding
  - 3.8.2. Building a Brand in the Industrial Market
  - 3.8.3. Stages in Communication Development
- 3.9. Commercial Function and Sales in Industrial Markets
  - 3.9.1. Importance of Commercial Management in the Industrial Company
  - 3.9.2. Sales Force Strategy
  - 3.9.3. Commercial Figure in the Industrial Market
  - 3.9.4. Commercial Negotiation
- 3.10. Distribution in Industrial Environments
  - 3.10.1. Nature of Distribution Channels
  - 3.10.2. Distribution in the Industrial Sector: Competitive Factor
  - 3.10.3. Types of Distribution Channels
  - 3.10.4. Choosing the Distribution Channel







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*Becoming a specialist in electronic systems engineering marketing will enable you to market your products more effectively”*

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 Diploma in Communication and Marketing guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma 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 Diploma in Communication and Marketing in Electronic Systems Engineering** contains the most complete and up-to-date program on the market.

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

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

Title: **Postgraduate Diploma Communication and Marketing in Electronic Systems Engineering**

Official N° of Hours: **450 h.**



\*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.



future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development language  
virtual classroom



## Postgraduate Diploma Communication and Marketing in Electronic Systems Engineering

- » Modality: **online**
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- » Certificate: **TECH Technological University**
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- » Exams: **online**

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