

# Postgraduate Certificate Electrical Engineering and Electronics



## Postgraduate Certificate Electrical Engineering and Electronics

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

Website: [www.techtute.com/us/engineering/postgraduate-certificate/electrical-engineering-electronics](http://www.techtute.com/us/engineering/postgraduate-certificate/electrical-engineering-electronics)

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# 01

# Introduction

Electrical engineering and electronics are crucial for technological innovation. Advances in these areas have led to the development of revolutionary technologies such as computing, communications, industrial automation, robotics and consumer electronics. For this reason, TECH has designed a degree that allows students to increase their knowledge to the maximum on aspects such as Electrical Circuits, Generators and Induction Motors, Power Supplies or Phototransistors, among others. All this, thanks to a 100% online modality and with the most dynamic and practical multimedia materials available in the academic market.



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*Enroll now and acquire new skills on electrical engineering and electronics quickly and in a 100% online modality”*

Electrical Engineering and Electronics are fundamental to engineers as they enable the creation and design of electronic and electrical systems for a wide variety of applications. These can range from small portable electronic devices to large industrial and infrastructure installations. Because of this, engineers need a thorough understanding of electrical and electronic principles in order to effectively design, build and maintain these systems.

For this reason, TECH has designed a Postgraduate Certificate in Electrical Engineering and Electronics with which it seeks to provide students with the necessary skills and competencies to be able to perform their work as specialists, with the highest possible efficiency and quality. Therefore, throughout this program, aspects such as the Bipolar Transistor, Optocouplers, the Electrical System or Electrical Installations will be dealt with.

All this, through a convenient 100% online modality that allows students to organize their schedules and studies, combining them with their other day-to-day work and interests. In addition, this degree has the most complete theoretical and practical materials on the market, which facilitates the student's study process and allows them to achieve their objectives quickly and efficiently.

This **Postgraduate Certificate in Electrical Engineering and Electronics** 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 Electrical Engineering and Electronics.
- ◆ The graphic, schematic and eminently practical contents of the book provide sporting and practical information on those 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
- ◆ The availability of access to content from any fixed or portable device with an Internet connection



*Become an expert in DC Circuits  
in only 6 weeks and with total  
freedom of organization"*

“

*Achieve professional success in one of the most promising areas of Engineering, thanks to TECH and the most innovative teaching materials"*

The program's teaching staff includes professionals from sector who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious 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.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.

*Access all the content on Electrical Engineering and Electronics from any device with internet connection, whether Tablet, mobile or computer.*

*Delve into the essential aspects of Circuit Theory, from the comfort of your home, 24 hours a day.*

# 02

# Objectives

The final objective of this Postgraduate Certificate in Electrical Engineering and Electronics is that the student acquires a precise update of his knowledge in this area. An update that will allow the student to work with the highest possible quality and efficiency. All this, thanks to TECH and a 100% online modality that gives total freedom of organization and schedules to the student.



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*It delves into aspects such as Ohm's Law or Simplification Procedures, from the comfort of your own home and without the need to travel of any kind"*



## General Objectives

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- ◆ Interpret basic electrical and electronic schematics
- ◆ Calculate the power consumed in an alternating current circuit
- ◆ Apply different options to increase the power factor in proposed situations
- ◆ Identify the main characteristics of the magnitudes of three-phase systems



*Reach your most demanding goals thanks to a unique program with the most complete theoretical and practical materials in the academic market"*





## Specific objectives

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- ◆ Analyze the operation of different electrical machines
- ◆ Solve operations with electrical amplification and filtering signals
- ◆ Explain the industrial importance of electronic instrumentation
- ◆ Use the technical language relating to the designation of units of quantities according to the international system of units

# 03

# Structure and Content

The structure and all the didactic resources of this curriculum have been designed by the renowned professionals that make up TECH's team of experts in this area of Engineering. These specialists have used their extensive experience and state-of-the-art knowledge to create practical and completely up-to-date content. All this, based on the most efficient pedagogical methodology, TECH Relearning.



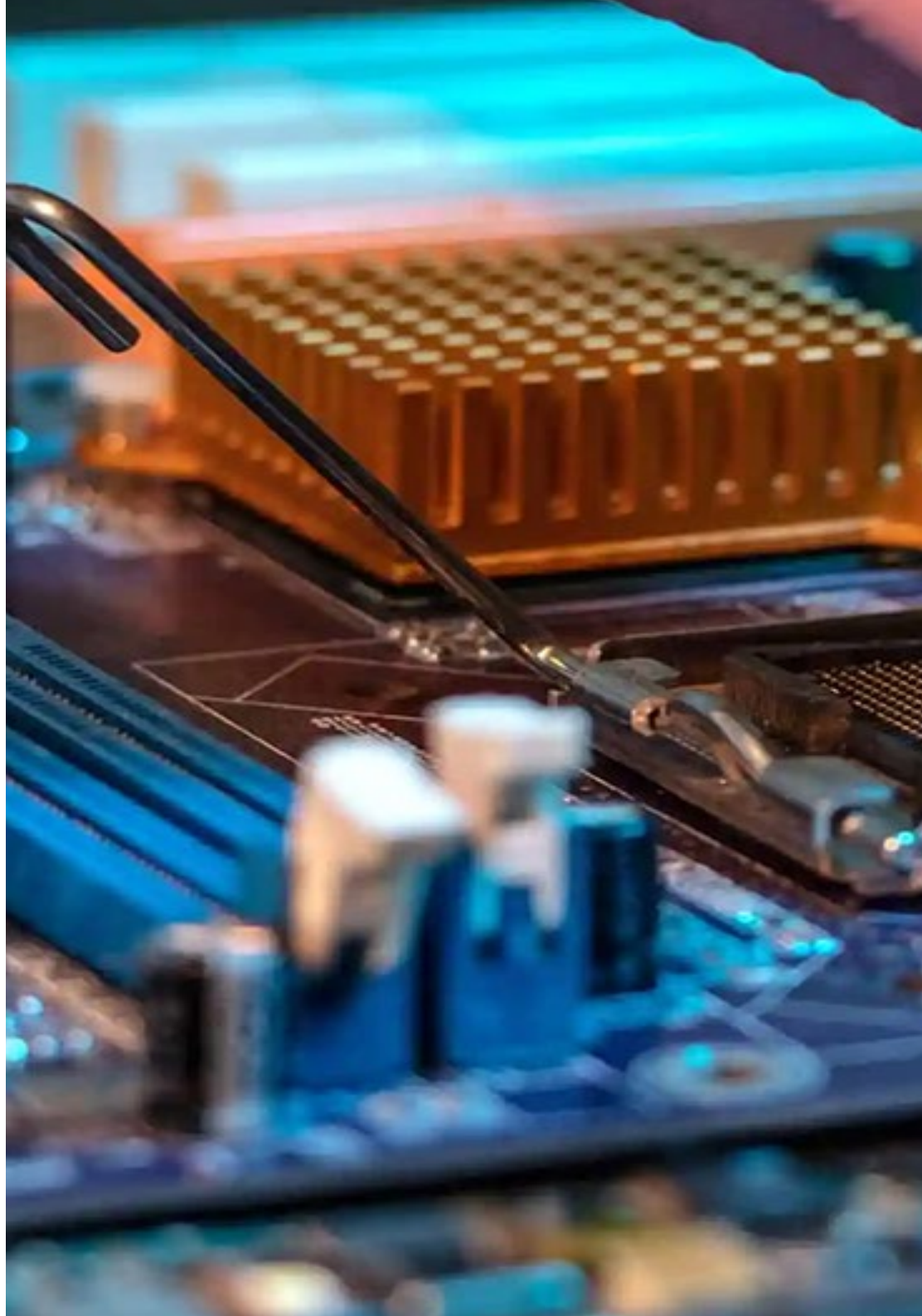


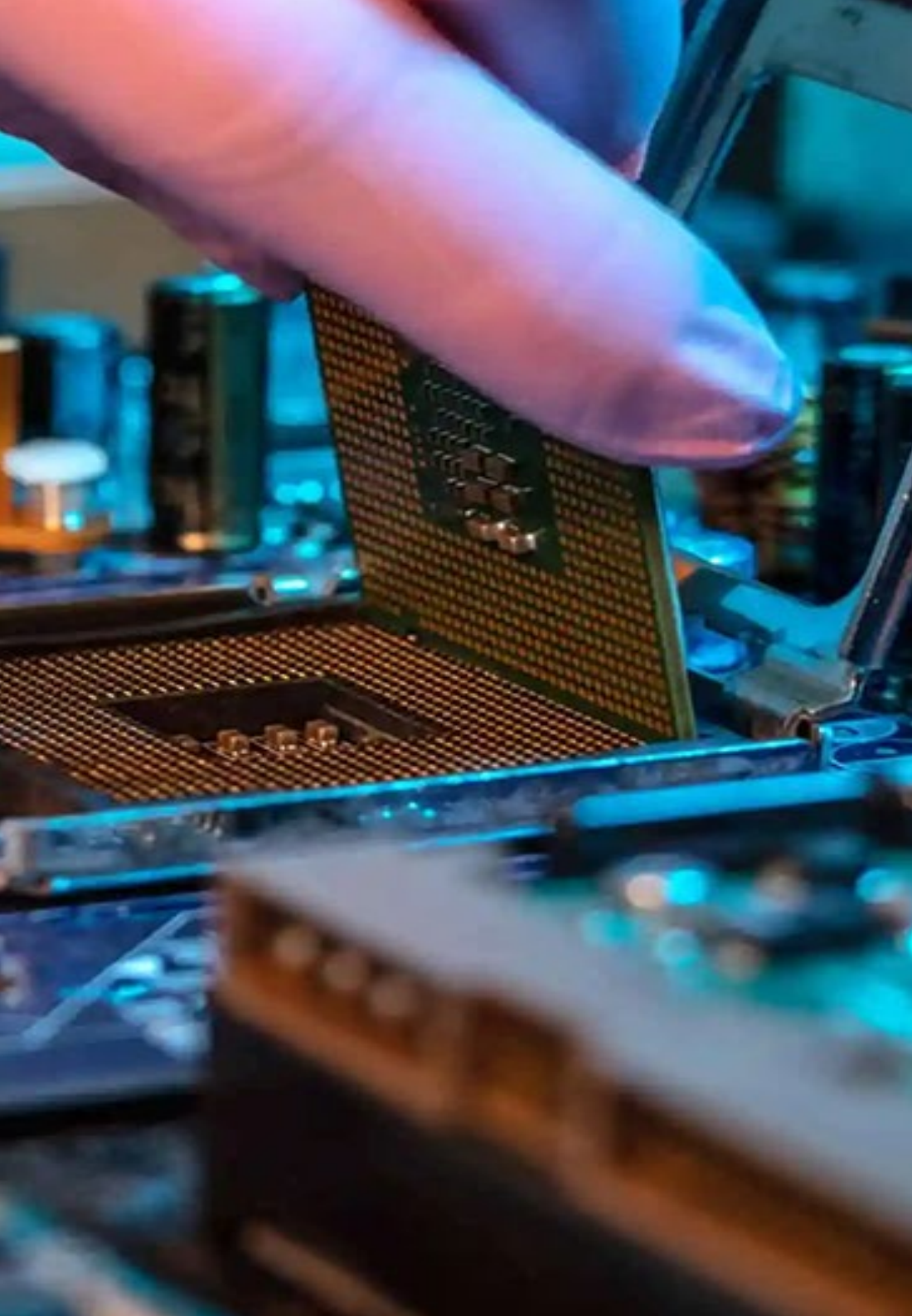
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*Expand your knowledge of electrical engineering and electronics, thanks to the most innovative teaching materials and a wide variety of additional content available on the Virtual Campus"*

## Module 1. Electrical Engineering and Electronics

- 1.1. Circuit Theory
  - 1.1.1. Electrical Circuits
  - 1.1.2. Voltage and Current Sources
  - 1.1.3. Passive Components
  - 1.1.4. Electrical Quantities and Units
- 1.2. Direct Current Circuits
  - 1.2.1. Ohm's Law
  - 1.2.2. Kirchoff's Laws
  - 1.2.3. Simplification Procedures
  - 1.2.4. Passive Sensors and Transducers
- 1.3. Alternating Current Circuits
  - 1.3.1. Sinusoidal Signals
  - 1.3.2. Electrical Quantities in AC Circuits
  - 1.3.3. AC Circuit Analysis
  - 1.3.4. Power Factor
  - 1.3.5. Introduction to Three-Phase Systems
  - 1.3.6. Circuits with Wye and Delta Loads
- 1.4. Machines and Electrical Installations
  - 1.4.1. Relays
  - 1.4.2. Transformers
  - 1.4.3. Generators and Induction Motors
- 1.5. Spanish Electricity System
  - 1.5.1. Electricity Production
  - 1.5.2. Electric Power Transmission and Distribution
  - 1.5.3. Low and Medium Voltage Standards
  - 1.5.4. Standards and Safety Devices
- 1.6. Electronics Introduction
  - 1.6.1. Electronics and Semiconductors
  - 1.6.2. Diodes
  - 1.6.3. PN Joint Principles
  - 1.6.4. Direct and Inverse Polarization
  - 1.6.5. Interpretation of Data Sheets





- 1.7. Circuits with Diodes
  - 1.7.1. Most Used Diode Types
  - 1.7.2. LED Diodes
  - 1.7.3. Power Supplies: Rectified
  - 1.7.4. Power Supplies: Filtering
- 1.8. Bipolar Transistor
  - 1.8.1. Structure and Polarization
  - 1.8.2. Features
  - 1.8.3. Operation
  - 1.8.4. Basic Circuits
- 1.9. Phototransistors and Optocouplers
  - 1.9.1. Features
  - 1.9.2. Automation Applications
  - 1.9.3. Voltage Regulators
- 1.10. FET Transistors
  - 1.10.1. FET and MOSFET Transistors
  - 1.10.2. Polarization and Characteristics
  - 1.10.3. Applications

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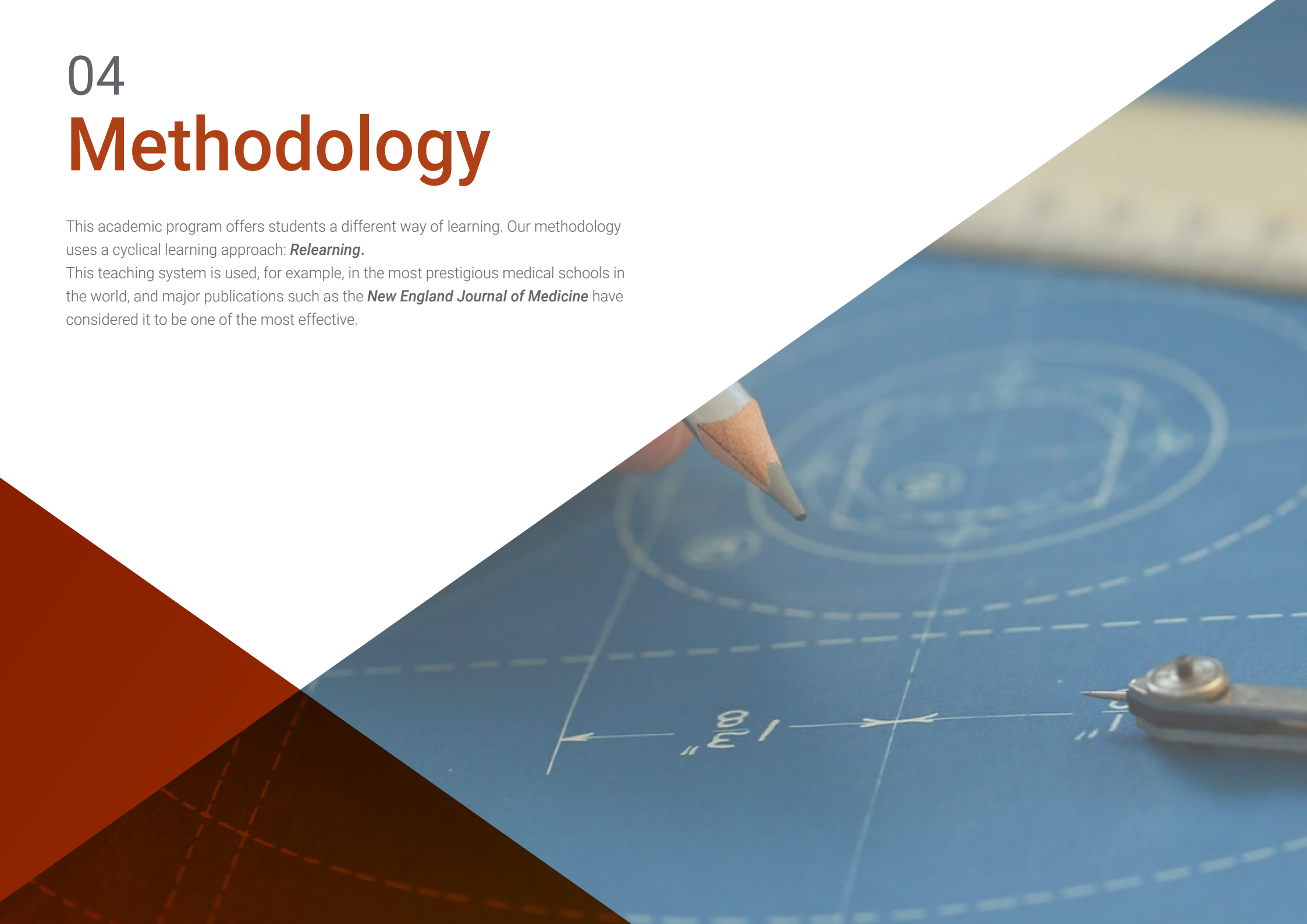
*Thanks to the most efficient teaching methodology, TECH Relearning, you will be able to acquire new knowledge in a precise and natural way, without spending too much time studying"*

# 04

# 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.







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*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.



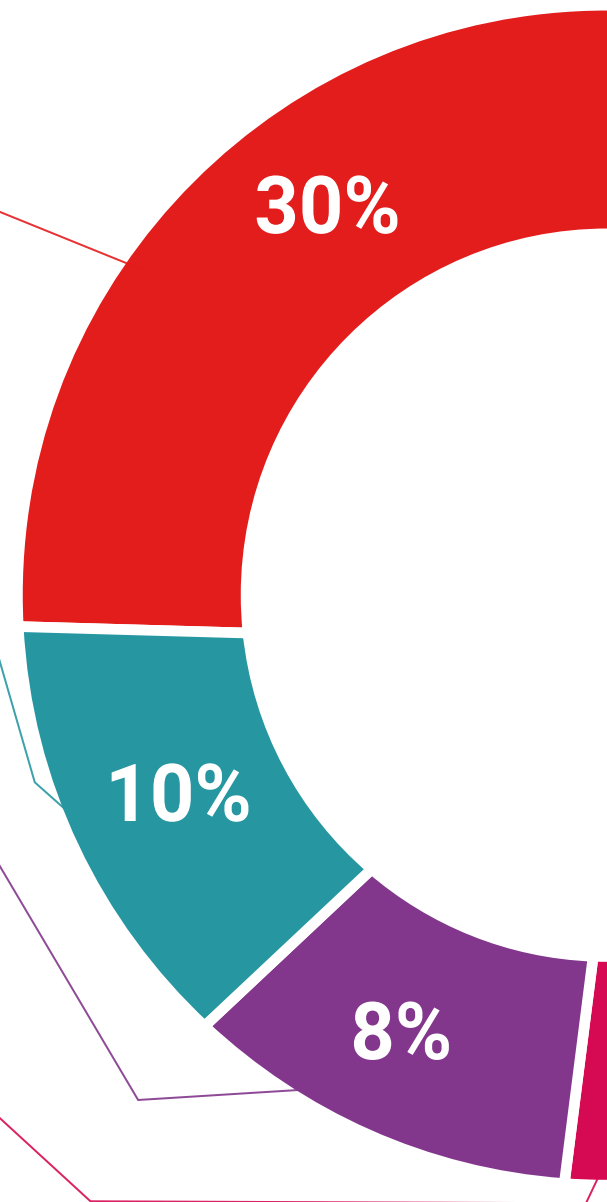
### Practising Skills and Abilities

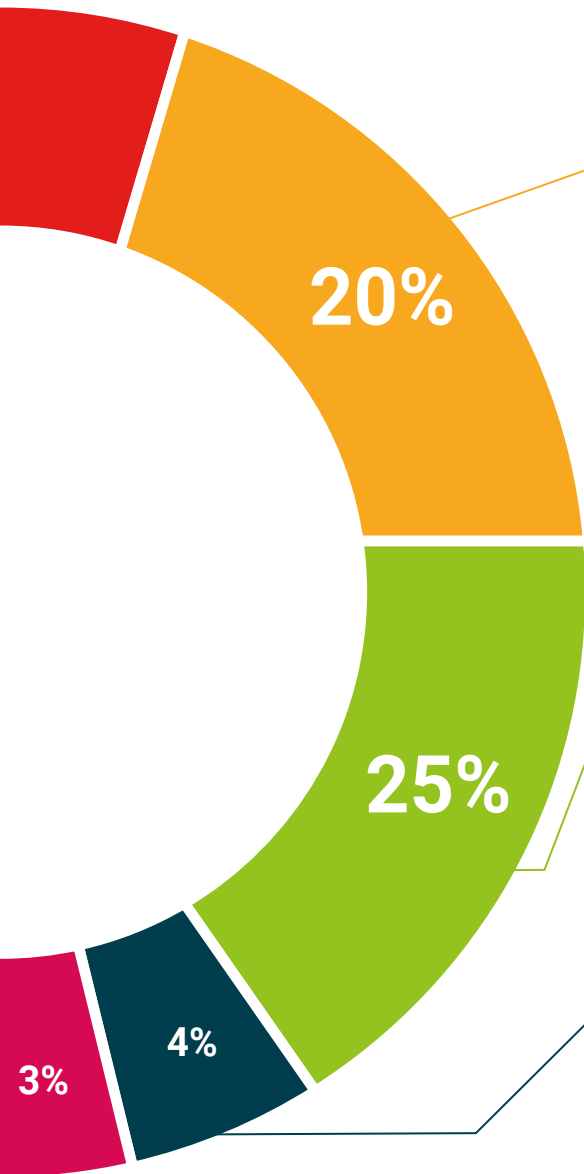
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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.



05

# Certificate

The Postgraduate Certificate in Electrical Engineering and Electronics 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 Electrical Engineering and Electronics** 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 Electrical Engineering and Electronics**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



\*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.

future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

personalized service innovation

knowledge present

development language

virtual classroom

**tech** global  
university

## Postgraduate Certificate Electrical Engineering and Electronics

- › Modality: online
- › Duration: 6 weeks
- › Certificate: TECH Global University
- › Credits: 6 ECTS
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