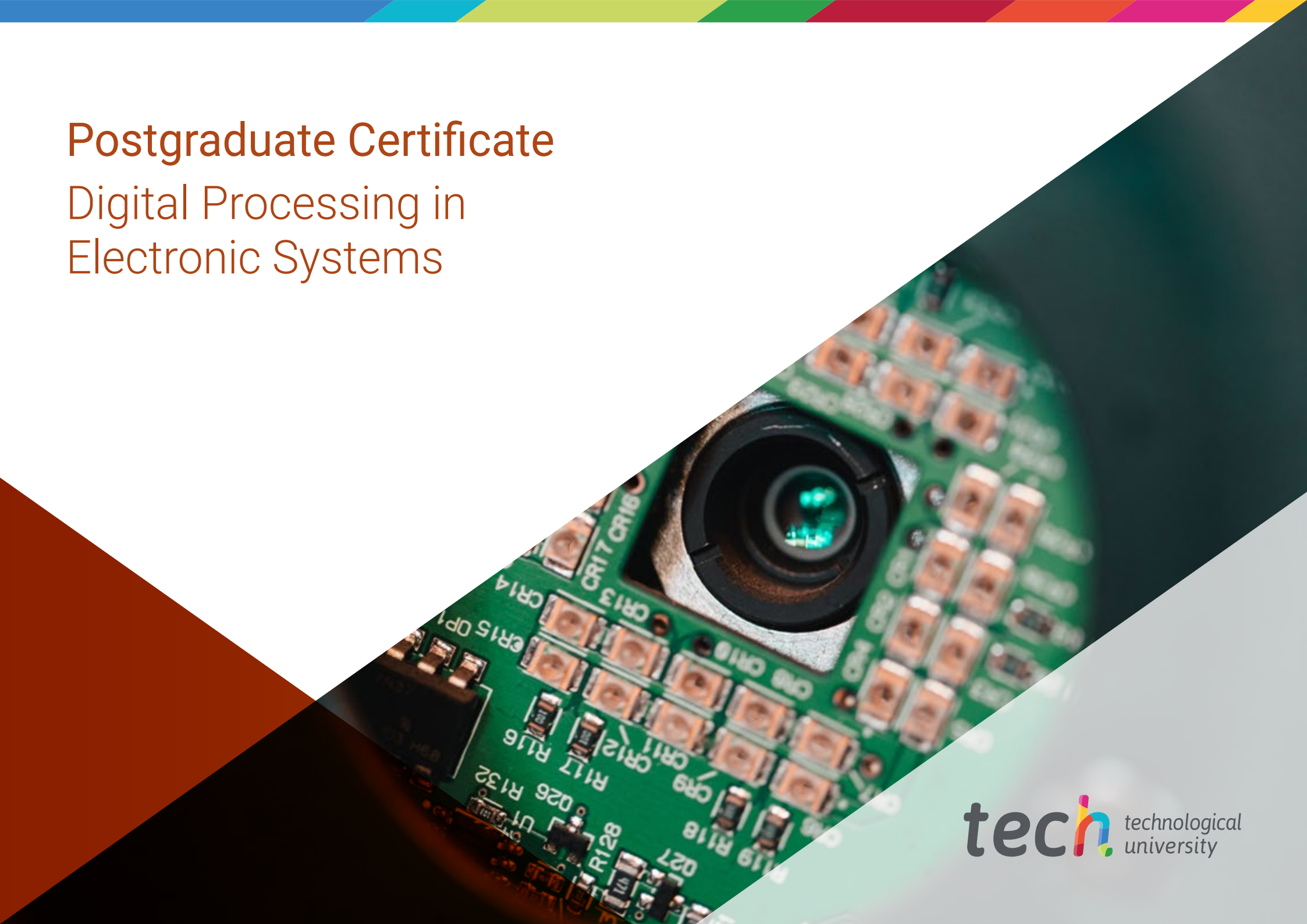
Postgraduate Certificate

Digital Processing in Electronic Systems



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Postgraduate Certificate
Digital Processing in Electronic Systems

- 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/digital-processing-electronic-systems**

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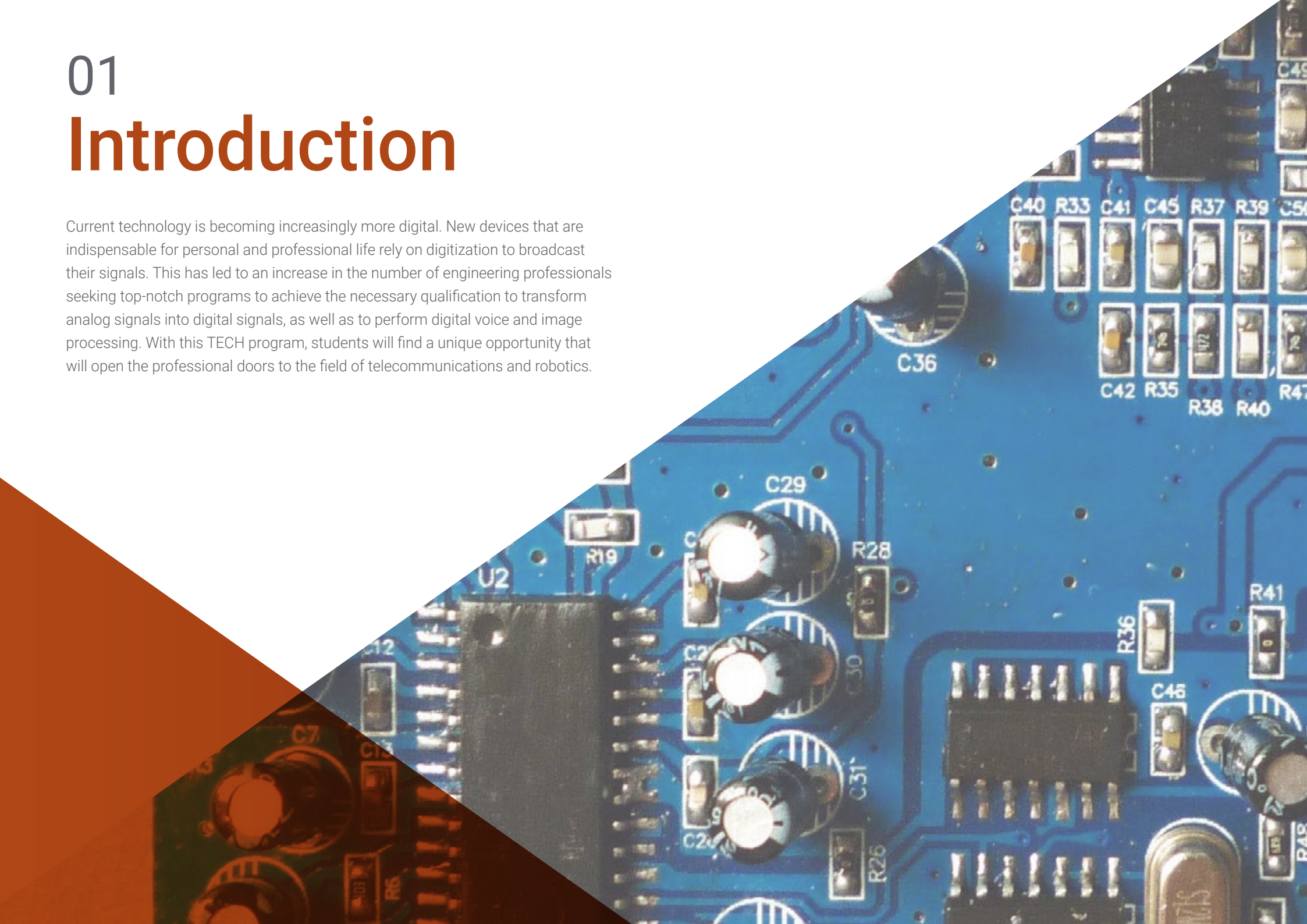
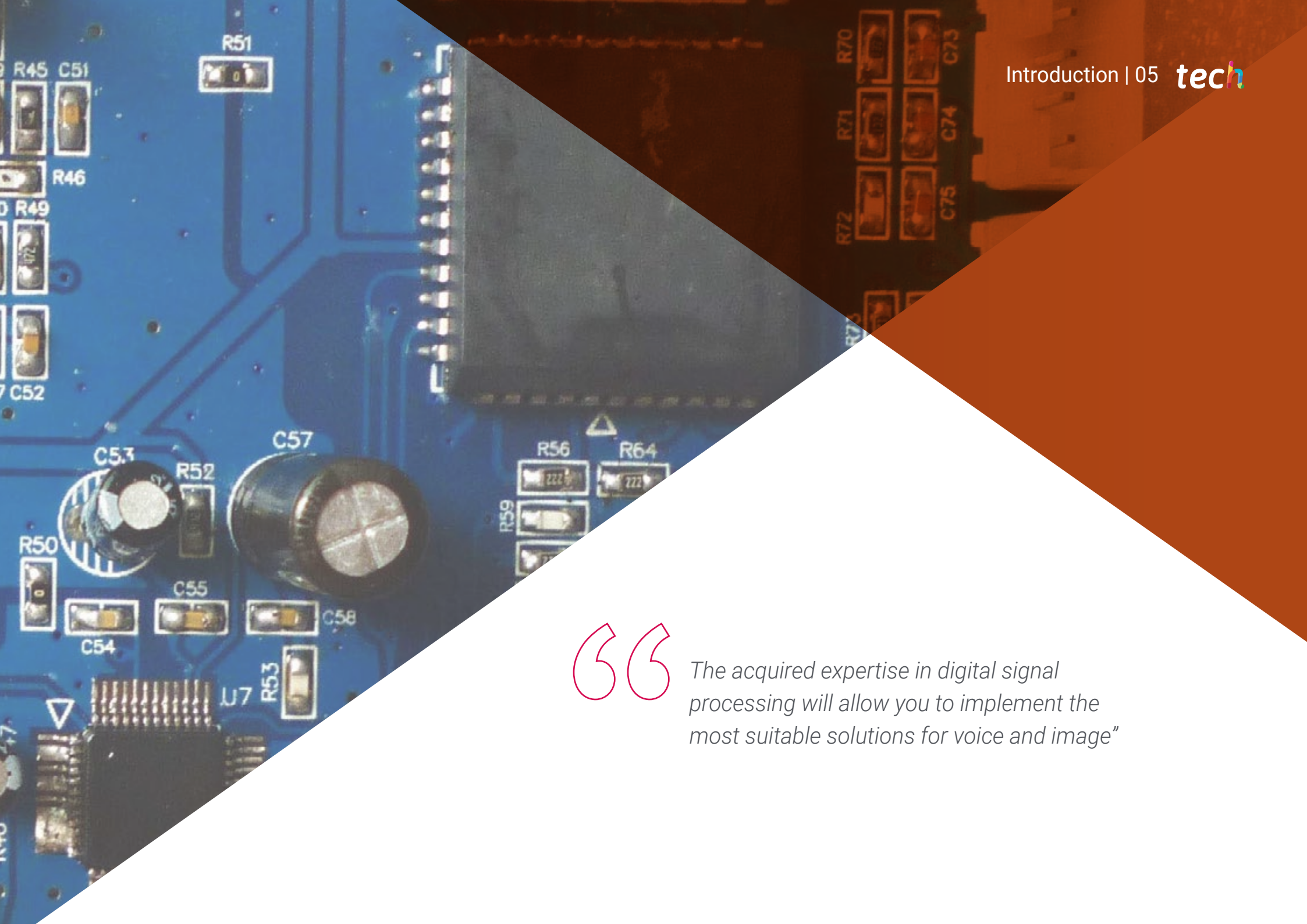
01

Introduction

Current technology is becoming increasingly more digital. New devices that are indispensable for personal and professional life rely on digitization to broadcast their signals. This has led to an increase in the number of engineering professionals seeking top-notch programs to achieve the necessary qualification to transform analog signals into digital signals, as well as to perform digital voice and image processing. With this TECH program, students will find a unique opportunity that will open the professional doors to the field of telecommunications and robotics.





The acquired expertise in digital signal processing will allow you to implement the most suitable solutions for voice and image"

Digital processing has experienced a remarkable development in the last decades with the implementation of more and more devices based on digital electronics. These devices make it possible to send, receive and process large volumes of data in increasingly less time. Techniques such as image or voice recognition and compression allow its application in video surveillance systems, telecare, artificial intelligence or generation of automatic subtitles, fundamental issues in the daily lives of many people. In this way, data pre-processing allows to operate with them in a fast and efficient way, reducing computational consumption.

The current market trend is towards an increase in this type of devices, given the continuous digitization of domestic, professional and research services. For this reason, TECH has designed this Postgraduate Diploma, which will be fundamental for the development of any professional in the electronic engineering sector. In this way, this program will introduce advanced digital signal processing techniques, including practical sessions with different cases for experimentation.

A 100% online Postgraduate Certificate that will allow students to distribute their study time, not being hindered by fixed schedules or the need to move to another physical location, as they can access all the contents at any time of the day, balancing their professional and personal life with their academic life.

This **Postgraduate Certificate Digital Processing in Electronic Systems** contains the most complete and up-to-date program on the market. Its most notable features are:

- Case studies presented by engineering experts
- 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

This Postgraduate Certificate will teach you how to program systems to achieve digital signal processing"

Become a digital processing specialist and open the doors to a new career path in the field of electronic systems”

Study at TECH, attend a 21st century university that is committed to quality education as a form of social progress.

TECH offers you the most innovative teaching methodology in the current academic panorama.

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

This TECH program has been designed with the main objective of providing engineers with the necessary qualifications to develop professionally in the field of Digital Processing in Electronic Systems. This will allow them to create devices that are capable of transforming analog signals into digital ones, which are essential for the current use of numerous technological devices. A high-level program that will program that will mark a before and after in the qualification of the students.

A high-level program with which you will be able to develop the necessary skills for electronic digital processing"

General Objectives

- Examine the current techniques in digital processing
- Implement solutions for the processing of digital signals (images and audio)
- Simulating digital signals and devices capable of processing them
- Program elements for signal processing
- Design filters for digital processing
- Operate with mathematical tools for digital processing
- Value the different options for signal processing

Specific Objectives

- Convert an analog signal into a digital one
- Differentiate between the types of digital systems and their properties
- Analyze the frequency behavior of a digital system
- Process, code and de-code images
- Simulate digital processors for voice recognition

Learn the main techniques for digital processing and be more efficient in your daily practice”

03

Course Management

The faculty selected by TECH for the realization of this Postgraduate Certificate has extensive knowledge in Digital Processing in Electronic Systems, as well as teaching experience. For this reason, they are well versed in the keys that engineers need to know in order to carry out this type of work with guarantees of success and have focused the study on those aspects that they need to know in a comprehensive manner. Faculty members who are aware of the need for higher qualifications in order to advance professionally and who make every effort to improve their students' skills.

A faculty with extensive industry experience who have compiled the most comprehensive information on digital processing"

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. Torralbo Vecino, Manuel

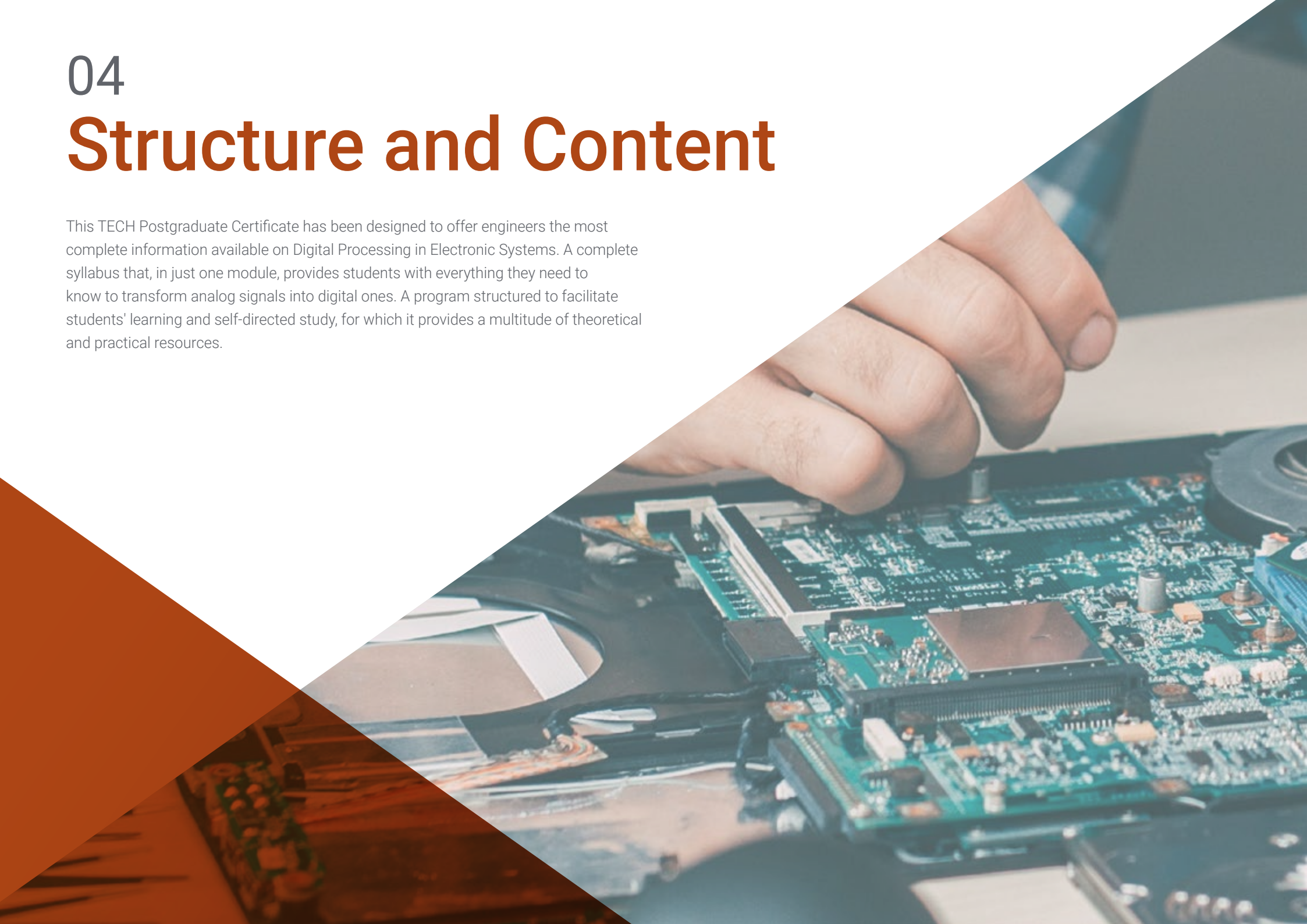
- Electronic Engineer in UCAnFly Project
- Electronic Engineer in Airbus D&S
- Degree in Industrial Electronic Engineering from University of Cadiz
- IPMA Level Certification as Project Manager

A unique, key, and decisive experience to boost your professional development"

04

Structure and Content

This TECH Postgraduate Certificate has been designed to offer engineers the most complete information available on Digital Processing in Electronic Systems. A complete syllabus that, in just one module, provides students with everything they need to know to transform analog signals into digital ones. A program structured to facilitate students' learning and self-directed study, for which it provides a multitude of theoretical and practical resources.



Learn the intricacies of digital processing and create useful electronic devices for users"

Module 1. Digital Processing

1.1. Discrete Systems
- 1.1.1. Discrete Signals
- 1.1.2. Stability of Discrete Systems
- 1.1.3 . Frequency Response
- 1.1.4. Fourier Transform
- 1.1.5. The Z Transform
- 1.1.6. Signal Sample

1.2. Convolution and Correlation
- 1.2.1. Signal Correlation
- 1.2.2. Signal Convolution
- 1.2.3. Application Examples

1.3. Digital Filters
- 1.3.1. Classes of Digital Filters
- 1.3.2. Hardware Used for Digital Filters
- 1.3.3. Frequency Analysis
- 1.3.4. Effects of the Filter on the Signals

1.4. Non-Recursive Filters (FIR)
- 1.4.1. Non-Infinite Impulse Response
- 1.4.2. Linearity
- 1.4.3. Determination of Poles and Zeros
- 1.4.4. Design of FIR Filters

1.5. Recursive Filters (IIR)
- 1.5.1. Recursion in Filters
- 1.5.2. Infinite Impulse Response
- 1.5.3. Determination of Poles and Zeros
- 1.5.4. Design of IIR Filters

1.6. Signal Modulation
- 1.6.1. Modulation in Amplitude
- 1.6.2. Modulation in Frequency
- 1.6.3. Modulation in Phase
- 1.6.4. Demodulators
- 1.6.5. Simulators

1.7. Digital Image Processing
- 1.7.1. Color Theory
- 1.7.2. Sample and Quantification
- 1.7.3. Digital Processing with OpenCV

1.8. Advanced Techniques in Image Digital Processing
- 1.8.1. Image Recognition
- 1.8.2. Evolutionary Algorithms for Images
- 1.8.3. Image Databases
- 1.8.4. *Machine Learning* Applied to Writing

1.9. Voice Digital Processing
- 1.9.1. Voice Digital Processing Model
- 1.9.2. Representation of the Voice Signal
- 1.9.3. Voice Codification

1.10. Advanced Voice Processing
- 1.10.1. Voice Recognition
- 1.10.2. Speech Signal Processing for Diction
- 1.10.3. Digital Speech Therapy Diagnosis

Learn the intricacies of digital processing and create useful electronic devices for users"

05

Methodology

This academic program offers students a different way of learning. Our methodology follows a cyclical learning process***: 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

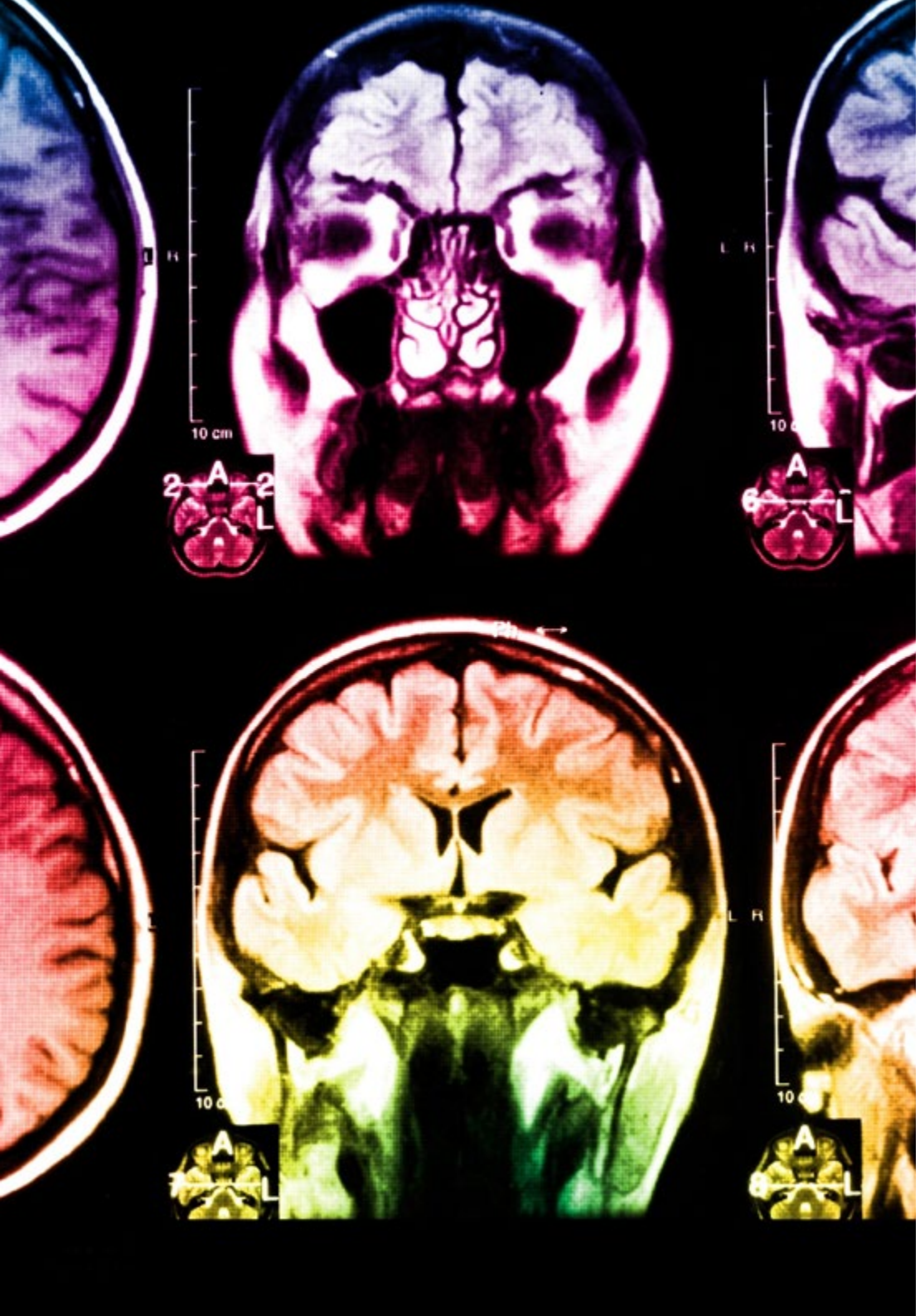
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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 prepare 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 prepared 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 education, 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.

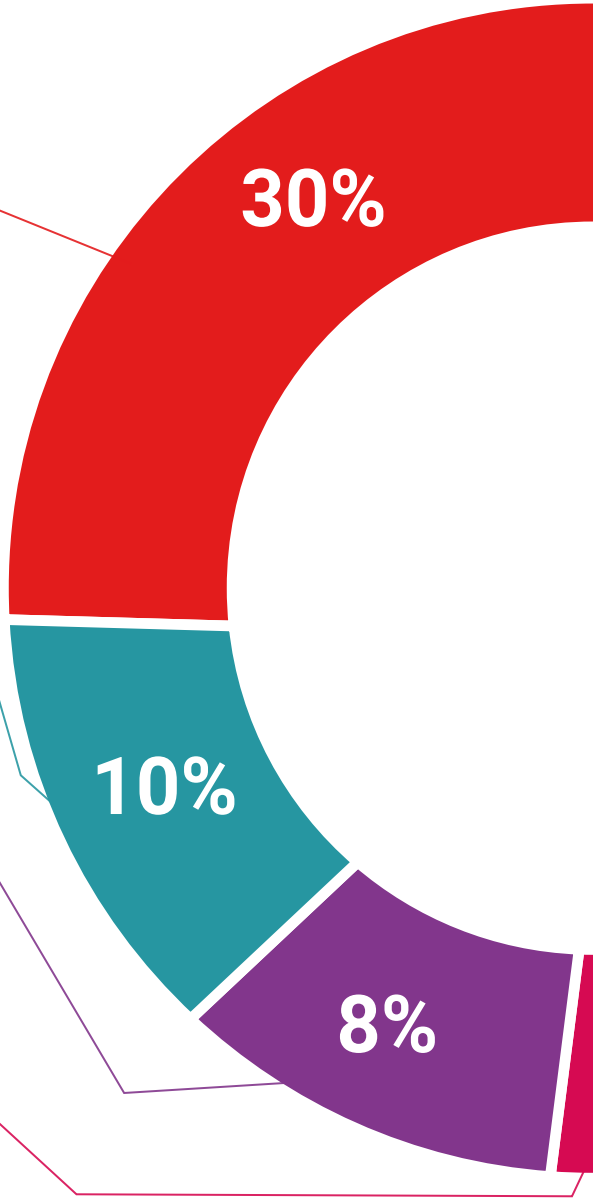
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

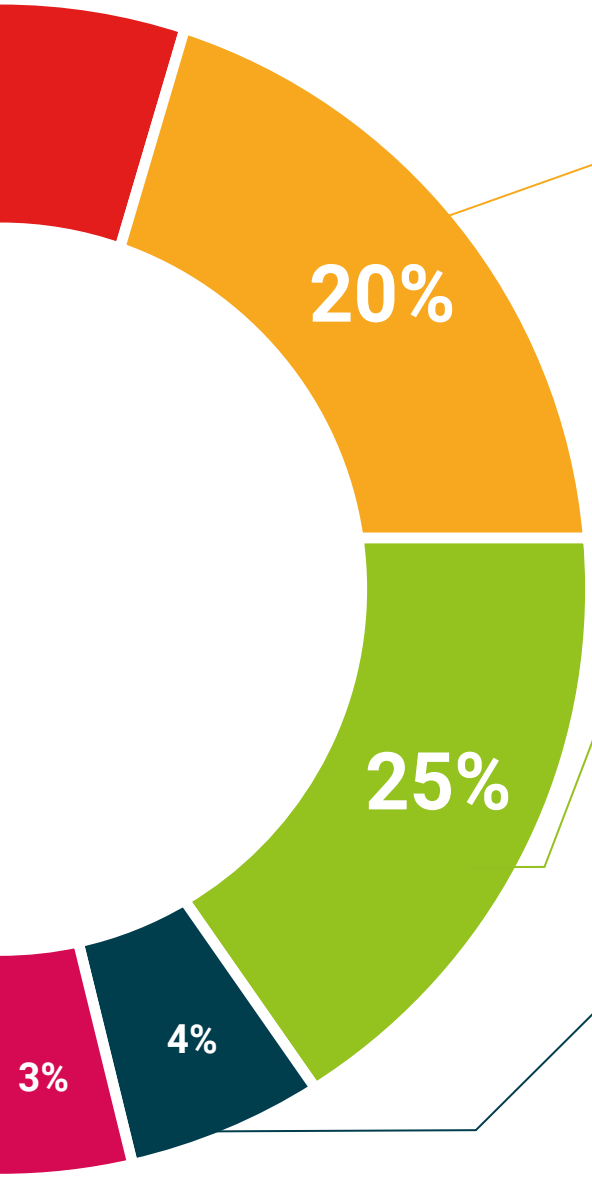
Practising Skills and Abilities

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

This Postgraduate Certificate in Digital Processing in Electronic Systems 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 Digital Processing in Electronic Systems** 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 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 Digital Processing in Electronic Systems**

Official Nº of Hours: **150 h.**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Awards the following

CERTIFICATE

to

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

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Digital Processing in Electronic Systems

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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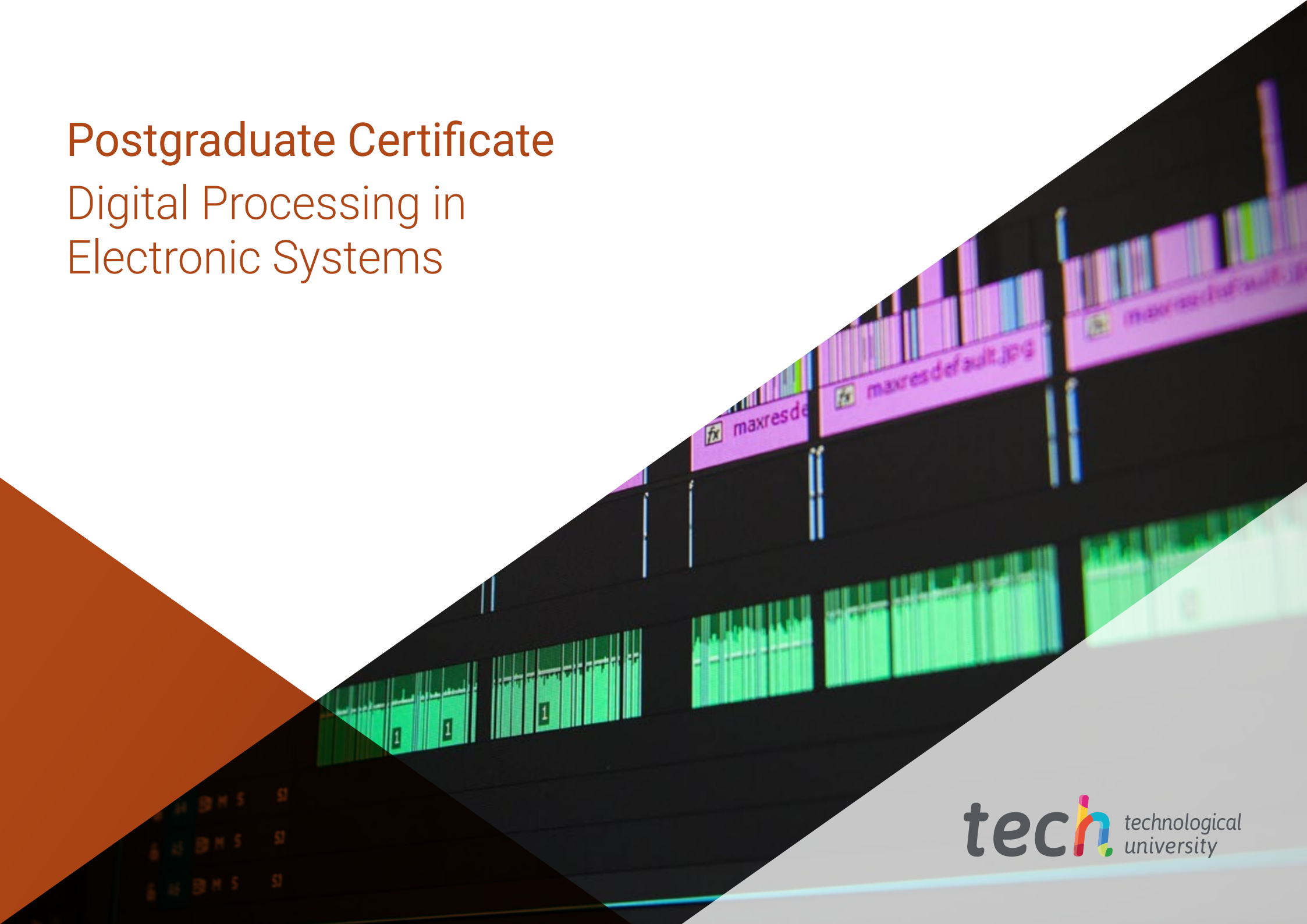

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