PostgraduateCertificate
Acoustic Physics Engineering

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Postgraduate Certificate
Acoustic Physics Engineering

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

Website: **www.techtitute.com/us/engineering/postgraduate-certificate/acoustic-physics-engineering**

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01

Introduction

Acoustics plays a fundamental role in numerous processes and architectural spaces: from the creation of functional environments in sectors such as music production and performance, to the sound adequacy of homes and public places. Therefore, Acoustic Physics Engineering is essential in many areas of everyday life, intervening in the well-being of the population and being a key element in industries such as the audiovisual. It is therefore essential to be able to design precise solutions that improve sound efficiency in various contexts. In response to this need, TECH has designed this 100% online academic program that will allow students to specialize in this field, placing them immediately at the professional forefront.

Study in a 100% online format with TECH and specialize in Acoustic Physics Engineering"

Acoustic Engineering has experienced remarkable advances in recent decades, driven by continuous technological and technical innovations in fields such as electronics and architecture. This evolution is of utmost importance when considering the prominent role that sound aspects have acquired in various fields, including Civil Engineering. In this context, sound plays an essential role in the planning and design of structures, in order to minimize noise propagation and ensure the comfort of residents.

With this in mind, TECH has developed this 6 week Postgraduate Certificate in Acoustic Physics Engineering, which offers a total deepening in this field. Therefore, this program covers from the complexities of mechanical vibrations to the absorption and attenuation of sound waves. By enrolling in this program, students will acquire the necessary knowledge to face acoustic challenges, design innovative solutions and contribute their expertise to this constantly evolving area.

Therefore, this program is presented as a significant opportunity for students, as it allows them to master innovative techniques in this discipline. All this, in a 100% online format, and with the support of the best faculty, which will prepare them to take advantage of all the current opportunities offered by the field of Acoustic Physics Engineering.

This **Postgraduate Certificate in Acoustic Physics Engineering** 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 Engineering and Acoustic Physics
- 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
- The practical exercises where the self-evaluation process can be carried out 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

This opportunity is the key to open the door to the field of Acoustic Physics. Enroll now!"

Learn how to apply principles of sound propagation in architectural elements through this Postgraduate Certificate"

Become the most qualified professional in Acoustic Physics and innovate. Enroll now and stand out in this complex area.

Study at TECH, the largest digital university in the world.

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

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive training programmed to train in real situations.

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

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Objectives

The objective of this program is to provide the professional with the latest advances in Acoustic Physics Engineering. The program will be taught in an online format, delving into the generation and propagation of sound in fluid media, as well as the interaction of sound waves with matter. The content of the Postgraduate Certificate also aims to familiarize students with the specific terminology and analytical approaches needed to effectively address acoustic challenges.

Become an expert in Acoustic Physics Engineering through the most innovative Postgraduate Certificate in the academic landscape"

General Objectives

- Develop the laws of physical acoustics that explain the behavior of sound waves such as the acoustic wave equation
- Develop the necessary knowledge on the handling of the essential concepts of sound generation and propagation in fluid media and the models that describe the behavior of sound waves in these media, both in their free propagation and in their interaction with matter from the formal and mathematical point of view
- Determine the nature and peculiarities of the acoustic elements of a system
- Familiarize the student with the terminology and analytical methods to solve acoustic problems

Specific Objectives

- Specify concepts related to the propagation of sound waves, such as resonances or the speed of sound in fluids
- Apply the principles of noise propagation outdoors and in architectural elements such as plates, membranes, pipes and cavities, etc
- Establish the principles governing the production of noise from sources and the propagation of sound waves and vibrations common in the building and the environment
- Analyze behaviors such as reflection, refraction, absorption, transmission, radiation and diffraction of sound

Choose the best digital university in the world according to Forbes. Study with the best experts in Acoustic Physics Engineering"

03

Course Management

TECH has assembled a group of leading specialists in the field of Acoustic Physics Engineering. Each of these faculty members has been selected because of their high skills, ensuring therefore that students have access to a syllabus designed by true experts in the field. These professionals have a solid background and research experience, which supports their commitment to delivering quality teaching. Their methodology guarantees interactive and personalized learning, addressing in a timely manner all student questions and concerns, with the objective that graduates of this academic syllabus develop the best skills in this field of action.

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

Management

Mr. Espinosa Corbellini, Daniel

- Expert Consultant in Audio Equipment and Room Acoustics
- Professor at the School of Engineering of Puerto Real from the University of Cadiz
- Design Engineer at Coelan Electrical Installations Company
- Audio Technician in Sales and Installations in the Daniel Sonido company
- Industrial Technical Engineer in Industrial Electronics at the University of Cadiz
- Industrial Engineer in Industrial Organization by the University of Cadiz
- Official Master's Degree in Evaluation and Management of Noise Pollution by the University of Cadiz
- Official Master's Degree in Acoustic Engineering from the University of Cadiz and the University of Granada
- Diploma of Advanced Studies by the University of Cadiz

Professors

Dr. Nava, Enrique

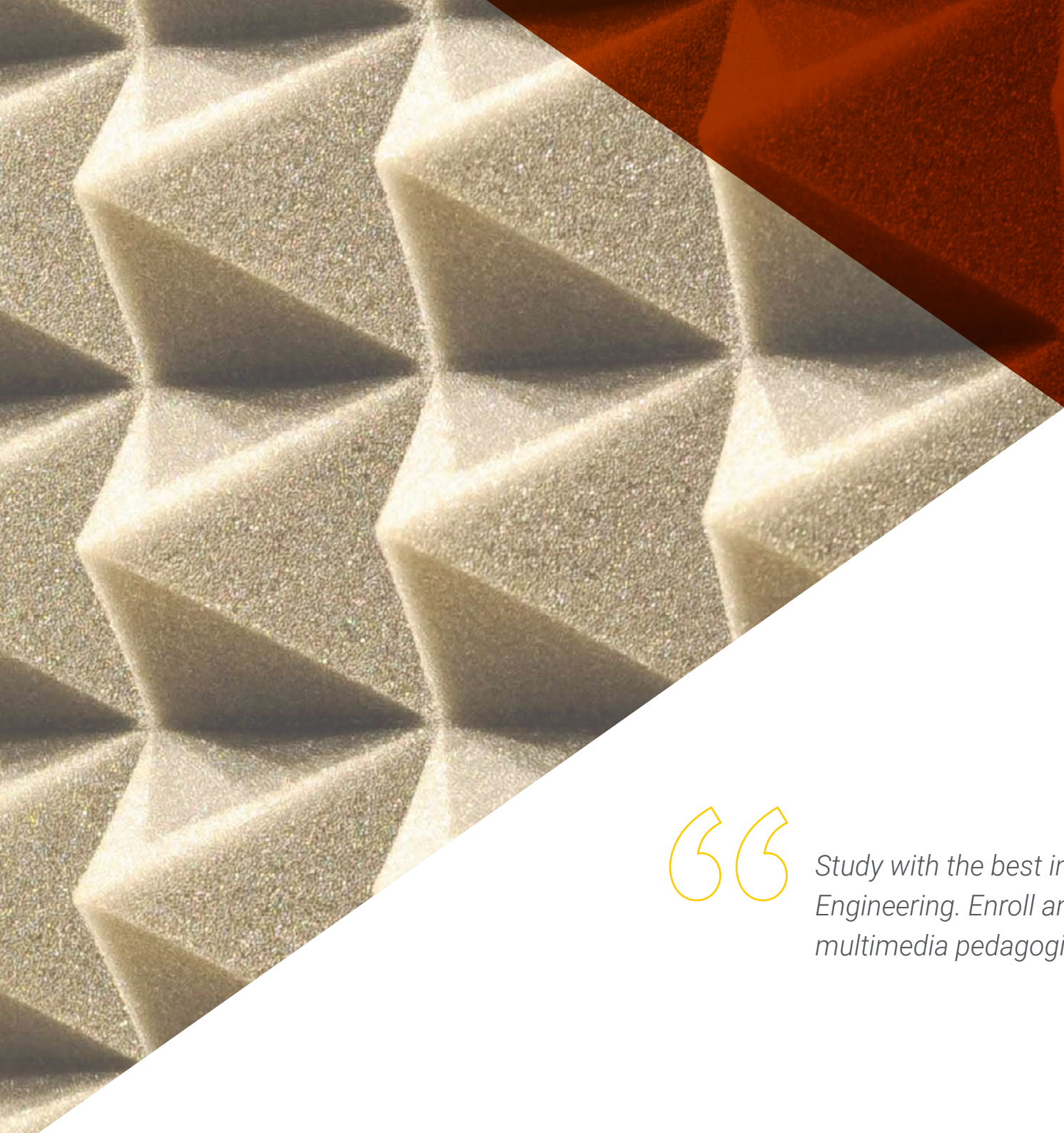
- Researcher specialized in Radiological Imaging
- Professor at the University of Malaga
- Responsible for the TIC128 research group of the Andalusian Research Plan
- Coordinating professor of Telecommunication and Biomedical Engineering programs, as well as collaborator in different masters offered by the universities of Cadiz and Granada
- PhD in Telecommunication Engineering from the Polytechnic University of Madrid
- Telecommunications Engineer from Universidad Politécnica de Madrid

Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"

04

Structure and Content

This program provides students with a complete immersion in the field of Acoustic Physics Engineering. The training will establish knowledge for graduates to reach the application of the fundamental concepts of mechanical resonance in various enterprises, ranging from the design of insulation systems in enclosures to the improvement of structures with acoustic considerations. What brings added value to this program is the dynamic nature with which it is presented, supported by a wide range of pedagogical resources implemented by TECH. Students will join a complete educational process, supported by cutting-edge technology applied to the virtual methodology.



Study with the best in Acoustic Physics Engineering. Enroll and enjoy the best multimedia pedagogical resources"

Module 1. Engineering Physics Acoustics

1.1. Mechanical Vibrations
- 1.1.1. Simple Oscillator
- 1.1.2. Damped and Forced Oscillations
- 1.1.3. Mechanical Resonance

1.2. Vibrations in Strings and Rods
- 1.2.1. The Vibrating String. Transverse Waves
- 1.2.2. Equation of the Longitudinal and Transverse Wave in Rods
- 1.2.3. Transverse Vibrations in Bars. Individual Cases

1.3. Vibrations in Membranes and Plates
- 1.3.1. Vibration of a Plane Surface
- 1.3.2. Two-dimensional Wave Equation for a Stretched Membrane
- 1.3.3. Free Vibrations of a Clamped Membrane
- 1.3.4. Forced Vibrations of a Membrane

1.4. Acoustic Wave Equation. Simple Solutions
- 1.4.1. The Linearized Wave Equation
- 1.4.2. Velocity of Sound in Fluids
- 1.4.3. Plane and Spherical Waves. The Point Source

1.5. Transmission and Reflection Phenomena
- 1.5.1. Changes of Medium
- 1.5.2. Transmission at Normal and Oblique Incidence
- 1.5.3. Specular Reflection. Snell's Law

1.6. Absorption and Attenuation of Sound Waves in Fluids
- 1.6.1. Absorption Phenomenon
- 1.6.2. Classical Absorption Coefficient
- 1.6.3. Absorption Phenomena in Liquids

1.7. Radiation and Reception of Acoustic Waves
- 1.7.1. Pulsed Sphere Radiation. Simple Sources. Intensity
- 1.7.2. Dipole Radiation. Directivity
- 1.7.3. Near-field and Far-field Behavior

1.8. Diffusion, Refraction and Diffraction of Acoustic Waves
  1.8.1. Non-Specular Reflection. Dissemination
  1.8.2. Refraction Effect of Temperature
  1.8.3. Diffraction. Edge or Grating Effect
1.9. Standing Waves: Tubes, Cavities, Waveguides
  1.9.1. Resonance in Open and Closed Tubes
  1.9.2. Sound Absorption in Tubes. Kundt Tube
  1.9.3. Rectangular, Cylindrical and Spherical Cavities
1.10. Resonators, Ducts and Filters
  1.10.1. Long Wavelength Limit
  1.10.2. Helmholtz Resonator
  1.10.3. Acoustic Impedance
  1.10.4. Duct-Based Acoustic FiltersDiffraction

Choose the ideal educational option to master Acoustic Physics and excel in sectors such as architecture"

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

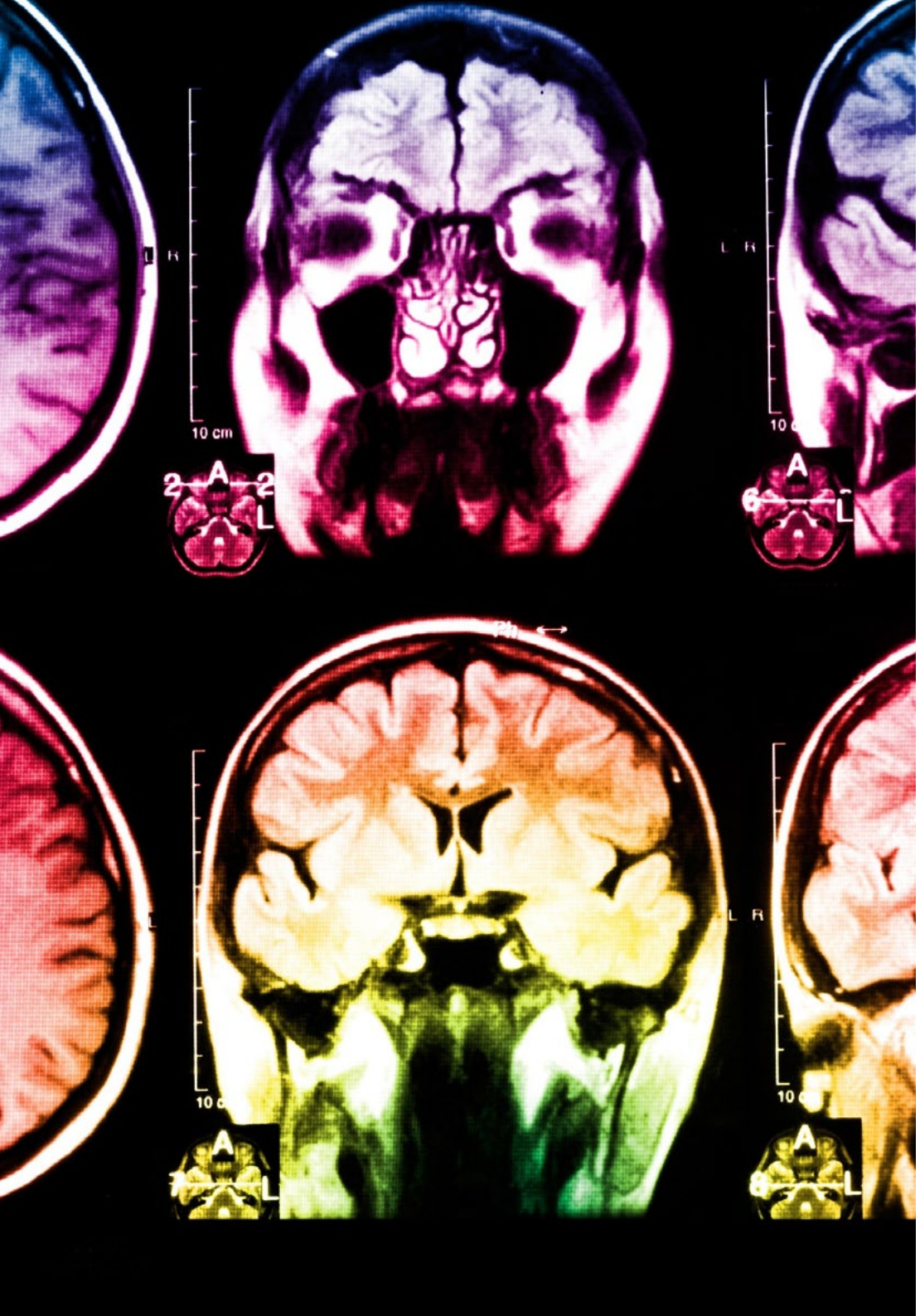
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

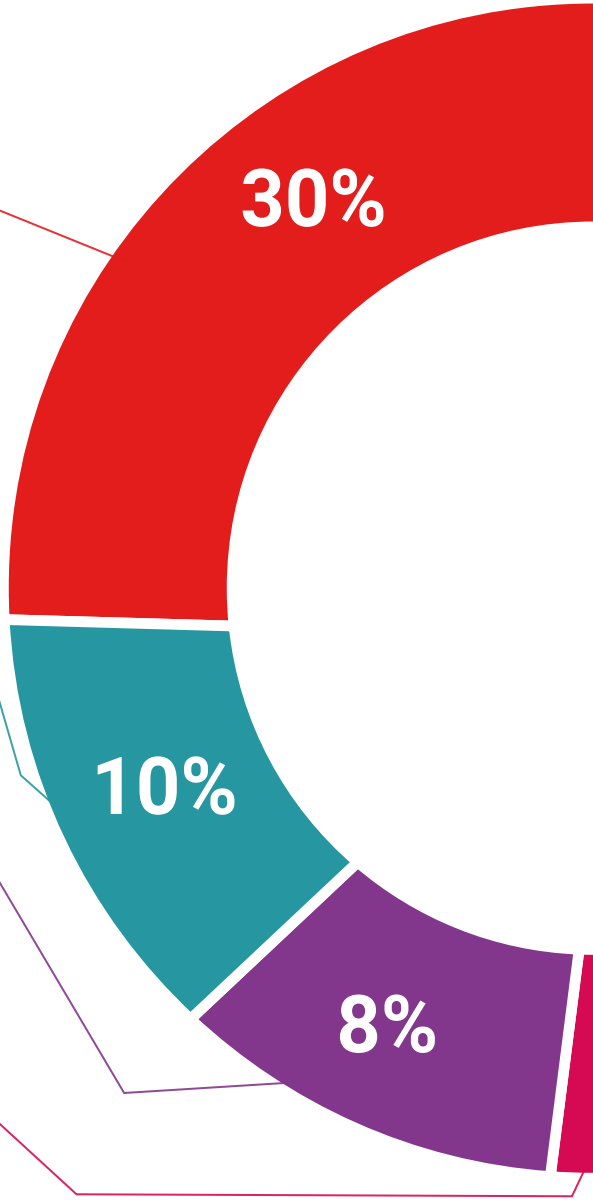
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

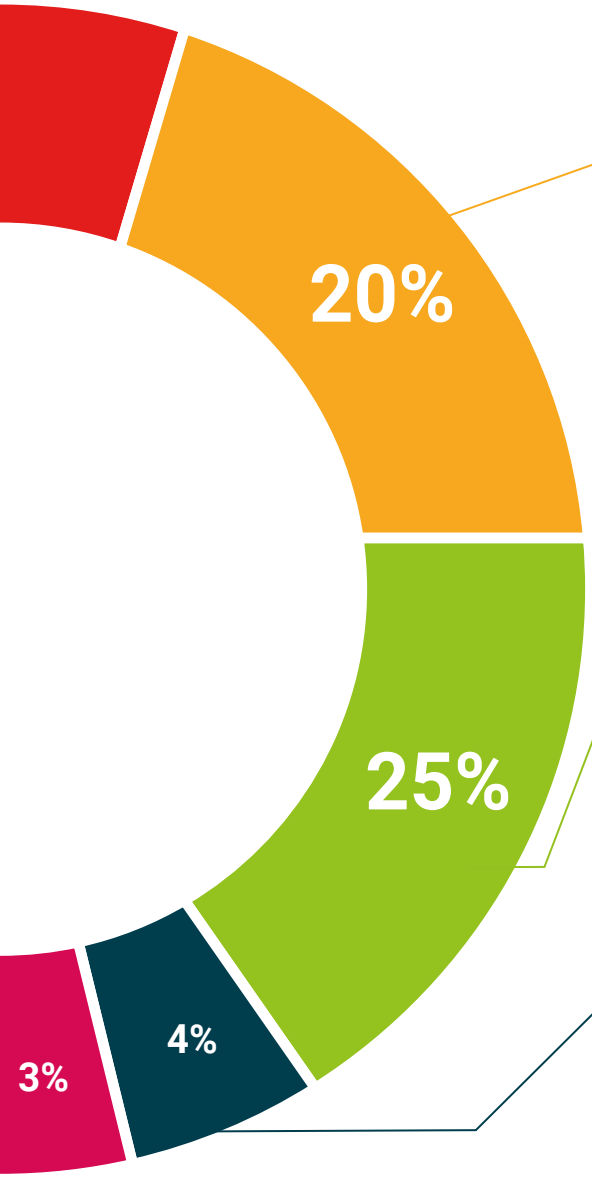
Practising Skills and Abilities

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 Certificate in Acoustic Physics Engineering 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 Acoustic Physics 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 Certificate** issued by **TECH Technological University** via tracked delivery*.

The diploma 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 in Acoustic Physics Engineering**

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

DIPLOMA

to

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

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Acoustic Physics Engineering

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 diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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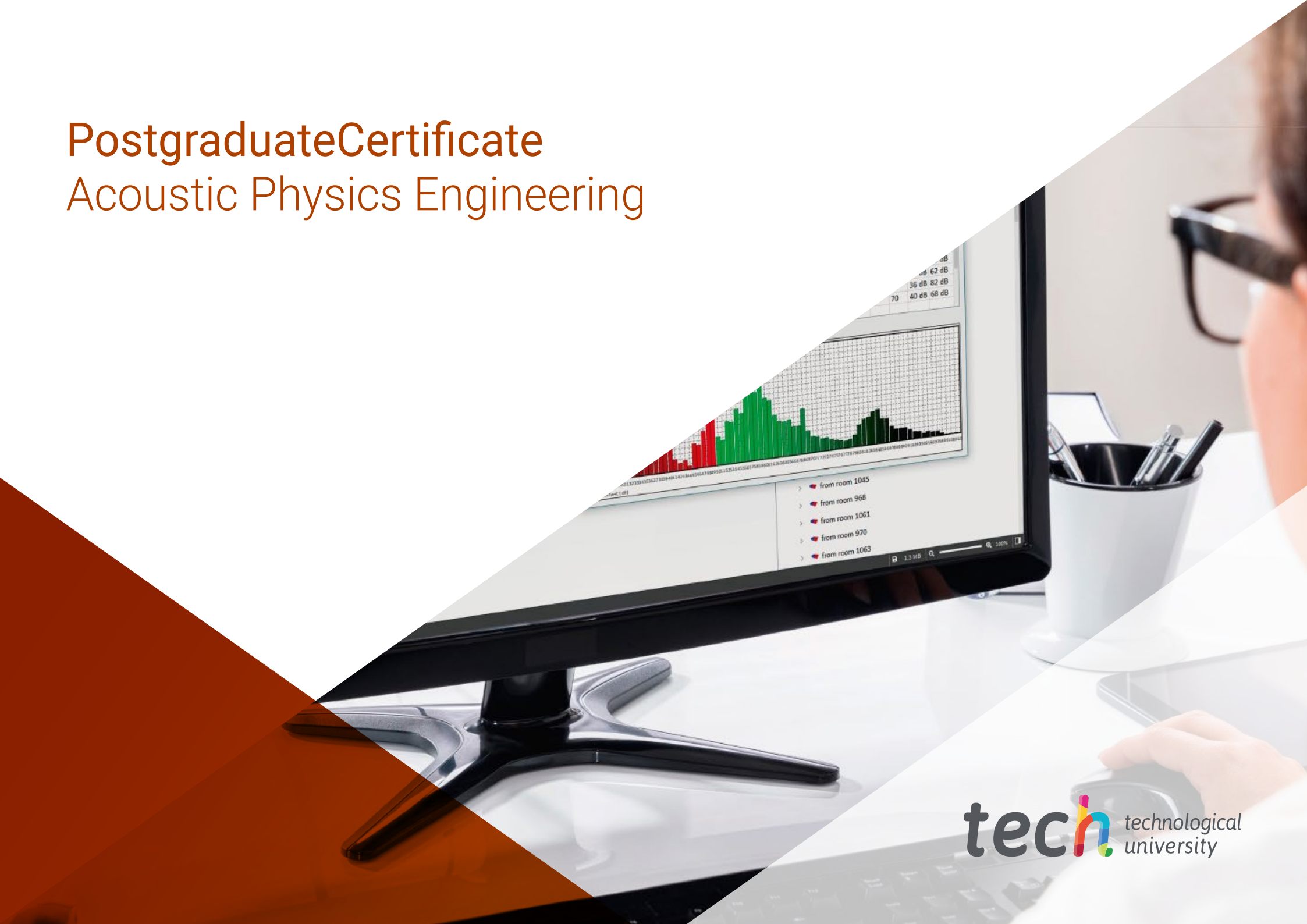

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