

# Postgraduate Certificate Lighting Installations



## Postgraduate Certificate Lighting Installations

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

Website: [www.techtute.com/pk/engineering/postgraduate-certificate/lighting-installations](http://www.techtute.com/pk/engineering/postgraduate-certificate/lighting-installations)

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01

# Introduction

Lighting in buildings is one of the main elements that contribute to energy savings, which is a benefit for the environment and also for family economies. This program will enable students to develop their work in lighting installations with quality and professionalism.





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*The use of new lighting technologies is one of the main actions to achieve energy savings”*

The Postgraduate Certificate in Lighting Installations addresses the complete range of issues involved in this field, both in the residential and tertiary sectors. Its study has a clear advantage over other programs that focus on specific blocks, which prevents the student from knowing the interrelationship with other areas included in the multidisciplinary field of energy efficiency and sustainability in the construction of buildings.

The improvement of the technologies used in the light sources, the planning of the lighting system, the integration of natural light and the control to adjust the quantity and other lighting parameters. Also, and as an essential element to achieve energy savings, the design and calculation of this type of installations will be discussed as one of the most decisive aspects.

Master all the fundamental terms of lighting technology, its application with light sources, mainly LED, and the practical application of the different and varied regulations, will be the basis on which the improvement of efficiency and energy savings in the lighting systems of buildings is developed.

The Postgraduate Certificate presents all the tools to propose energy-saving improvements in existing buildings or in new installations, from the knowledge of the equipment,

lighting and visual requirements, as reflected in the lighting project. The study of the contents will enable the student to apply the different technologies used, how to improve all the aspects that are part of the efficiency of the system, from an approach that ensures the visual and lighting quality, and will be able to address the design, calculation and analysis of the lighting project.

Additionally, as it is a 100% online program, the student is not constrained by fixed timetables or the need to move to another physical location, but can access the contents at any time of the day, balancing their professional or personal life with their academic life.

This **Postgraduate Certificate in Lighting Installations** contains the most complete and up-to-date academic program on the market. The most important features include:

- ◆ The development of practical cases presented by experts in Lighting Installations
- ◆ The graphic, schematic, and practical contents with which they are created provide scientific and practical information on the disciplines that are essential for professional development
- ◆ Practical exercises where the self-assessment process can be carried out to improve learning
- ◆ Its special emphasis on innovative methodologies in Lighting Installations
- ◆ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection work
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



*Do not miss the opportunity to take with us this Postgraduate Certificate in Lighting Installations. It's the perfect opportunity to advance your career"*

“ *This Postgraduate Certificate is the best investment you can make when selecting a refresher program to update your knowledge in Lighting Installations”*

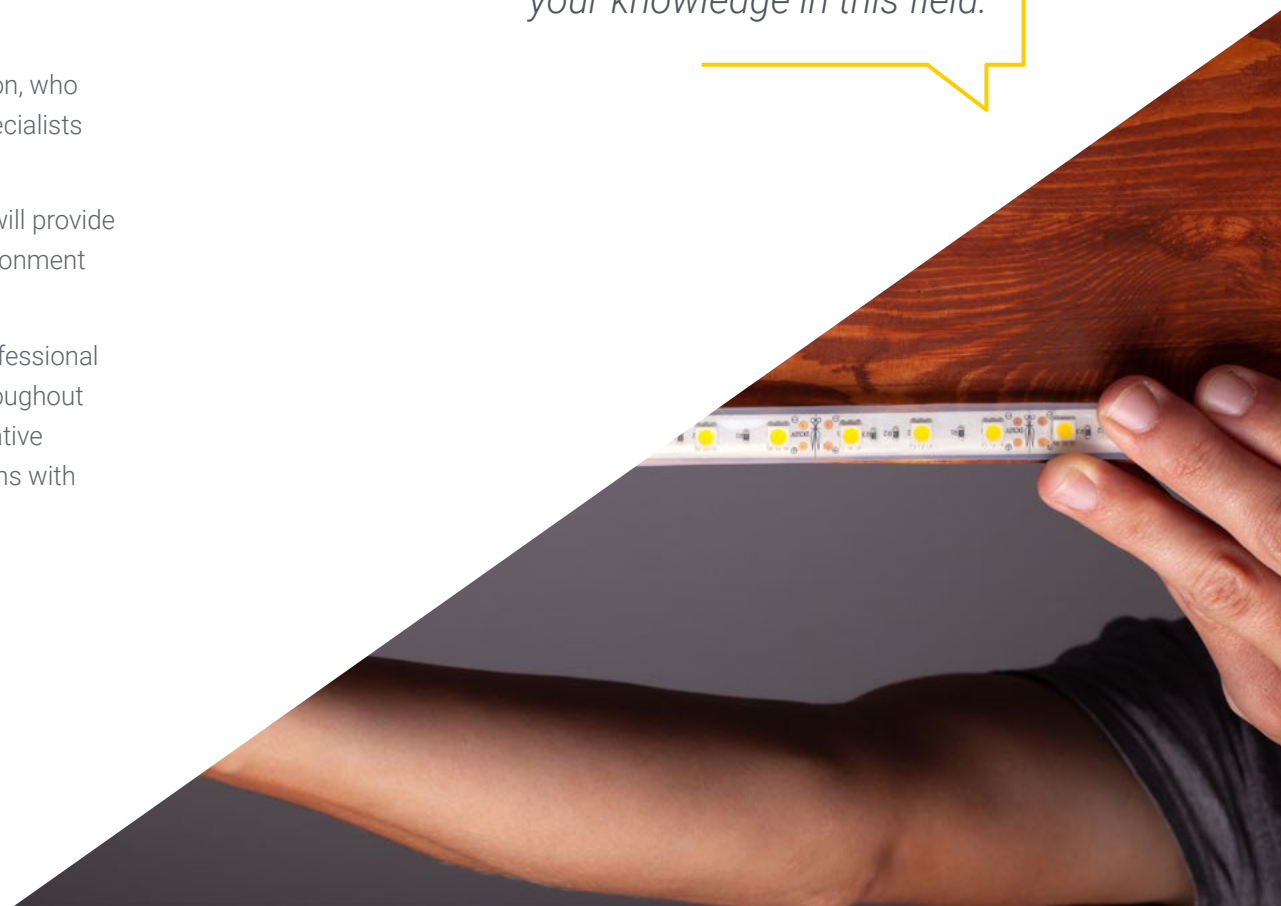
Its teaching staff includes professionals belonging to the field of construction, who bring to this program the experience of their work, as well as recognized specialists from leading companies and prestigious universities.

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 training programmed to train 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 throughout the program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned experts in Lighting Installations with extensive experience.

*This program comes with the best teaching material, providing you with a contextual approach that will facilitate your learning.*

*This 100% online Postgraduate Certificate will allow you to balance your studies with your professional work while increasing your knowledge in this field.*



# 02 Objectives

The Postgraduate Certificate in Lighting Installations is oriented to facilitate the performance of the professional in this field to acquire and know the main developments in this area of building.





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*Our goal is to help you to be the best in your profession and for this we count on the quality of our teachers and subjects”*



## General Objectives

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- ◆ In-depth breakdown of the properties of light involved in building energy savings
- ◆ Master and apply the techniques and requirements for the design and calculation of lighting systems, seeking to comply with health, visual and energy criteria

“ Take the step to get up to date  
on the latest developments in  
Lighting Installations ”





## Specific Objectives

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- ◆ Apply the principles of lighting technology, its properties, differentiating the aspects that contribute to energy savings
- ◆ Analyze the criteria, characteristics and requirements of the different solutions that can be used in buildings
- ◆ Design and calculate lighting projects, improving energy efficiency
- ◆ Integrate health-enhancing lighting techniques as a benchmark in energy savings



03

# Course Management

In our university we have professionals specialized in each area of knowledge, who bring their work experience into our programs.



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*Our university employs the best professionals in all areas who share their knowledge to help you”*

## Management



### Mr. Nieto-Sandoval González- Nicolás, David

- ♦ Industrial Technical Engineer by the E.U.P. of Málaga
- ♦ Industrial Engineer from E.T.S.I.I.
- ♦ Master's Degree in Integral Management of Quality, Environment and Health and Safety at Work from the University of the Balearic Islands
- ♦ He has been working for more than 11 years, both for companies and independently, for clients in the private agri-food industrial sector and the institutional sector, as a consultant in engineering, project manager, energy saving and circularity in organizations
- ♦ Professor certified by the EOI in the areas of industry, entrepreneurship, human resources, energy, new technologies and technological innovation
- ♦ Trainer for the European INDUCE project
- ♦ Trainer at institutions such as COGITI or COIIM

## Professors

### Ms. Peña Serrano, Ana Belén

- ♦ Technical Engineer in Topography from the Polytechnic University of Madrid
- ♦ Master's Degree in Renewable Energies from San Pablo CEU University
- ♦ Postgraduate Certificate in Geological Cartography from Universidad Nacional de Educación a Distancia (National University of Distance Education)
- ♦ Postgraduate Certificate in Building Energy Certification from Fundación Laboral de la Construcción
- ♦ Her experience covers several sectors from working on site, to managing people in human resources
- ♦ She collaborates in different scientific communication projects, directing the dissemination in different media in the field of energy

- ♦ Member of the work management team for the Master's Degree in Environmental and Energy Management in Organizations at the International University of La Rioja

### Mr. González Cano, José Luis

- ♦ Degree in Optics and Optometry from the Complutense University of Madrid
- ♦ Lighting Designer He collaborates with companies in the lighting sector in consulting, training, lighting technology projects and implementation of ISO 9001:2015 quality systems (internal auditor)
- ♦ He is a teacher for Vocational Training in electronic systems, telematics (CISCO certified instructor), radio communications, IoT
- ♦ Member of the Professional Association of Lighting Designers (Technical Consultant) and member of the Spanish Lighting Committee, who participates in working groups on LED technology

“

*Specialize in the world's  
leading private Spanish-  
speaking online university”*

# 04

# Structure and Content

The structure of the contents has been designed by the best professionals in the field of sustainability and energy-saving in building construction, with extensive experience and recognized prestige in the profession.





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*We have the most complete and up-to-date program on the market. We strive for excellence and for you to achieve it too"*

## Module 1. Lighting installations

- 1.1. Light Sources
  - 1.1.1. Lighting Technology
    - 1.1.1.1. Properties of Light
    - 1.1.1.2. Photometry
    - 1.1.1.3. Photometric Measurements
    - 1.1.1.4. Luminaires
    - 1.1.1.5. Auxiliary Electrical Equipment
  - 1.1.2. Traditional Light Sources
    - 1.1.2.1. Incandescent and Halogen
    - 1.1.2.2. High- and Low-Pressure Sodium Vapor
    - 1.1.2.3. High- and Low-Pressure Mercury Steam
    - 1.1.2.4. Other Technologies: Induction, Xenon
- 1.2. LED Technology
  - 1.2.1. Principle of Operation
  - 1.2.2. Electrical Characteristics
  - 1.2.3. Advantages and Disadvantages
  - 1.2.4. LED Luminaires. Optical
  - 1.2.5. Auxiliary Equipment. *Driver*
- 1.3. Interior Lighting Requirements
  - 1.3.1. Standards and Regulations
  - 1.3.2. Lighting Project
  - 1.3.3. Quality Criteria
- 1.4. Outdoor Lighting Requirements
  - 1.4.1. Standards and Regulations
  - 1.4.2. Lighting Project
  - 1.4.3. Quality Criteria
- 1.5. Lighting Calculations with Calculation Software. DIALux
  - 1.5.1. Features
  - 1.5.2. Menus
  - 1.5.3. Project Design
  - 1.5.4. Obtaining and Interpreting Results





- 1.6. Lighting Calculations with Calculation Software. EVO
  - 1.6.1. Features
  - 1.6.2. Advantages and Disadvantages
  - 1.6.3. Menus
  - 1.6.4. Project Design
  - 1.6.5. Obtaining and Interpreting Results
- 1.7. Energy Efficiency in Lighting
  - 1.7.1. Standards and Regulations
  - 1.7.2. Energy Efficiency Improvement Measures
  - 1.7.3. Integration of Natural Light
- 1.8. Biodynamic Lighting
  - 1.8.1. Light Pollution
  - 1.8.2. Circadian Rhythms
  - 1.8.3. Harmful Effects
- 1.9. Calculation of Interior Lighting Projects
  - 1.9.1. Residential Buildings
  - 1.9.2. Business Buildings
  - 1.9.3. Educational Centers
  - 1.9.4. Hospitals
  - 1.9.5. Public Buildings
  - 1.9.6. Industries
  - 1.9.7. Commercial and Exhibition Spaces
- 1.10. Calculation of Outdoor Lighting Projects
  - 1.10.1. Street and Road Lighting
  - 1.10.2. Facades
  - 1.10.3. Signs and Illuminated Signs

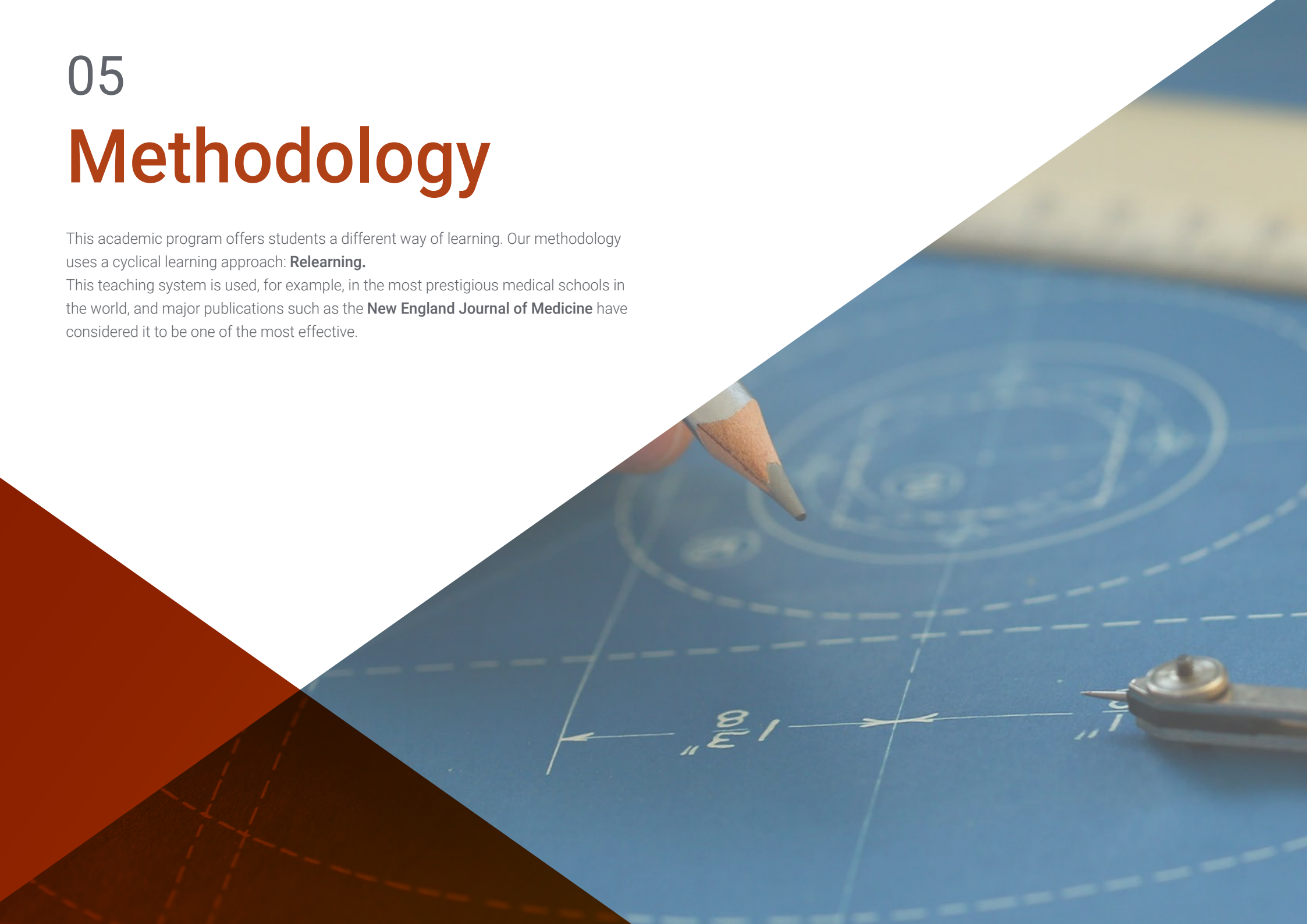
“ *This program will allow you to advance in your career comfortably* ”

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.*



### 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 student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

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.



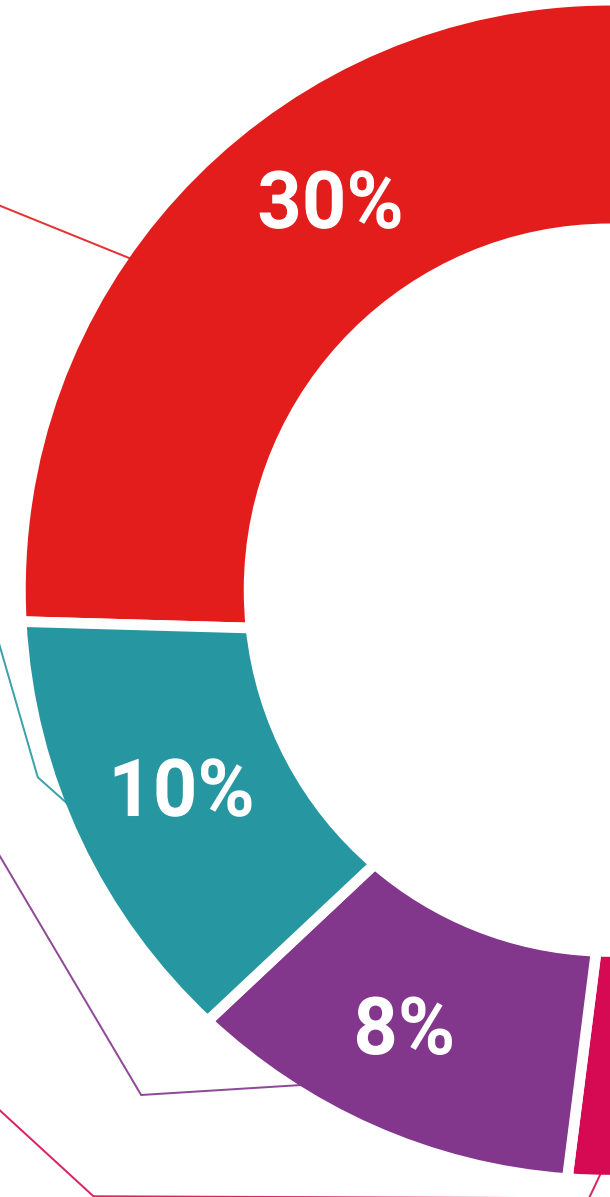
### Practising Skills and Abilities

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 Lighting Installations guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.



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

This **Postgraduate Certificate in Lighting Installations** 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 job markets, competitive examinations and professional career evaluation committees

Title: **Postgraduate Certificate in Lighting Installations**

Official N° of hours: **150 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

**tech** technological  
university

personalized service innovation

knowledge present quality

development language

virtual classroom

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