

# Postgraduate Diploma Sustainable Development in the Construction of Buildings



## Postgraduate Diploma Sustainable Development in the Construction of Buildings

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/engineering/postgraduate-diploma/postgraduate-diploma-sustainable-development-construction-buildings](http://www.techtute.com/us/engineering/postgraduate-diploma/postgraduate-diploma-sustainable-development-construction-buildings)

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# 01

# Introduction

Sustainable Development in the Construction of Buildings is based on the principles of respect for and commitment to the environment, making efficient use of energy and the resources and materials used in construction, in order to reduce the environmental impact that this entails. With this prestigious program you will gain a thorough understanding of structural elements and their effect on the energy efficiency of a building.







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*Engineering professionals must continue their training during their career to adapt to new developments in the field”*

The Postgraduate Diploma in Sustainable Development in the Construction of Buildings 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 Sustainable Development in the Construction of Buildings.

By completing and passing the assessments of this specialized program, the student will obtain a solid knowledge of Sustainable Development in the Construction of Buildings.

Throughout these months of specialization, you will learn more about energy consumption and demand, as these are the key factors for a building to be energetically comfortable. You will learn to detect the relationship of a building with human health, as well as to have a comprehensive approach to the circular economy in buildings in order to maintain a strategic vision of implementation and best practices.

In as it is a 100% online Postgraduate Diploma, 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 Diploma in Sustainable Development in the Construction of Buildings** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ The development of practical cases presented by experts in Sustainable Development in the Construction of Buildings
- ◆ 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 Sustainable Development in the Construction of Buildings
- ◆ 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 Diploma in Sustainable Development in the Construction of Buildings. It's the perfect opportunity to advance your career"*



“

*This Postgraduate Diploma is the best investment you can make when selecting a refresher program to update your existing knowledge in Sustainable Development in the Construction of Buildings”*

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 and experienced experts in Sustainable Development in the Construction of Buildings.

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

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



# 02

# Objectives

The Postgraduate Diploma in Sustainable Development in the Construction of Buildings is designed to facilitate the performance of the professionals in this field to enable them to master the main developments in this area of Engineering.





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*This is the best option to learn about the latest advances in Sustainable Development in the Construction of Buildings”*





## General Objectives

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- ◆ Understand the impact of a city's energy consumption and the major elements that make it function, the buildings.
- ◆ Analyze energy consumption and demand in depth, as these are the key determinants of a building's energy comfort
- ◆ Prepare the students in the general knowledge of the different norms, standards, regulations and existing legislation, which will allow them to delve into the specific ones that act in the development of procedures for the actions in the field of energy-saving in buildings
- ◆ Delve into the importance of the architectural tools that will make it possible to make the best use of the climatic environment of a building
- ◆ Choose the most efficient equipment and detect deficiencies in the electrical installation to reduce consumption, optimize installations and establish a culture of energy efficiency in the organization
- ◆ 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
- ◆ Delve into and analyze the different control systems installed in buildings, the differences between them, the applicability criteria in each case and the energy savings provided







## Specific Objectives

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### Module 1. Circular Economy

- ◆ Have a comprehensive approach to the circular economy in buildings in order to maintain a strategic vision of implementation and best practices
- ◆ Quantify through life cycle analysis and carbon footprint calculation the impact of real estate management on sustainability in order to develop improvement plans that allow energy savings and environmental impact reduction in buildings
- ◆ Master the criteria of green public procurement in the real estate sector in order to be able to face and manage them with criteria

### Module 2. Energy Audits and Certification

- ◆ Recognize the type of work to be developed depending on the objectives set by the client to recognize the need to perform an energy audit
- ◆ Perform an energy audit according to EN 16247-2 to establish an action protocol to determine the initial situation and to propose energy saving options
- ◆ Analyze the provision of energy services to know each of their characteristics in defining energy service contracts
- ◆ Perform energy certification on buildings to determine the initial energy rating and define improvement options according to standards

### Module 3. Bioclimatic Architecture

- ◆ Gain exhaustive knowledge of the structural elements and their effect on building energy efficiency
- ◆ Study structural components that allow the use of sunlight and other natural resources and their architectural adaptation
- ◆ Detect the connection between buildings and human health



*Take the step to get up to date on the latest developments in Sustainable Development in the Construction of Buildings”*

03

# Course Management

In our university we have professionals specialized in each area of study, who contribute their expertise into our training courses.







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

## International Guest Director

Stefano Silvani is a proven leader in digital transformation, with more than 10 years of experience driving technology innovations in areas such as cloud, IoT, Artificial Intelligence, Machine Learning (AI/ML), Software as a Service (SaaS) and Platform as a Service (PaaS) solutions. As such, his background includes a strategic focus on transforming business models and negotiating large-scale enterprise deals. In addition, his interests encompass value creation through technology, the development of new digital solutions and leadership implementation.

He has also worked in world-renowned companies such as General Electric Digital, where he played a crucial role in the launch of Predix, the first industrial IoT platform in the market. He has also joined Siemens Digital Industries, where he has led the expansion of the Mindsphere platform and the code development platform under Mendix. In this sense, his career has continued at Siemens Smart Infrastructure, where he has led the global pre-sales team for the intelligent building platform Building X, generating advanced technology solutions for global companies.

In addition to his professional work, he has been an active speaker on topics of digital innovation, value co-creation and leadership. With experience in several countries, such as Italy, Spain, Luxembourg and Switzerland, he has brought a global perspective to his projects, exploring new ways to drive business and technological innovation worldwide.

He has also been recognized for his ability to lead digital transformations in complex organizations. In fact, his team has generated \$70 million in annual revenue, offering consulting services in intelligent buildings and architectural governance solutions. And it is his focus on cross-functional collaboration and his ability to manage global teams that have positioned him as a trusted advisor to senior executives.





## Mr. Silvani, Stefano

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- Global Head of Pre-Sales at Siemens, Zurich, Switzerland
- Global Pre-Sales - Smart Buildings at Siemens
- Presales Predix - EMEA at GE Digital
- Commercial Contracts and Partnership Management Officer at Menarini International Operations Luxembourg SA
- Master's Degree in Economics and Management at the University Di Roma Tor Vergata
- Master's Degree in Computer Engineering and Big Data at the University Telematica Internazionale

“

*Thanks to TECH, you will be able to learn with the best professionals in the world”*

## 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





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*Train in the world's leading private online university”*

04

# Structure and Content

The structure of the contents has been designed by the best professionals in the sector, with extensive experience and recognized prestige in the profession.







“

*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. Circular Economy

- 1.1. Circular Economy Tendency
  - 1.1.1. Circular Economy Origin
  - 1.1.2. Circular Economy Definition
  - 1.1.3. Circular Economy Necessity
  - 1.1.4. Circular Economy as Strategy
- 1.2. Circular Economy Features
  - 1.2.1. First Principle: Preserve and Improve
  - 1.2.2. Second Principle: Optimize
  - 1.2.3. Third Principle: Promote
  - 1.2.4. Key Features
- 1.3. Circular Economy Benefits
  - 1.3.1. Economic Advantages
  - 1.3.2. Social Benefits
  - 1.3.3. Business Benefits
  - 1.3.4. Environmental Benefits
- 1.4. Circular Economy Legislation
  - 1.4.1. Regulations
  - 1.4.2. European Directives
  - 1.4.3. Legislation in Spain
  - 1.4.4. Autonomous Community Legislation
- 1.5. Life Cycle Analysis
  - 1.5.1. Life Cycle Analysis (LCA) Scope
  - 1.5.2. Stages
  - 1.5.3. Reference Standards
  - 1.5.4. Methodology
  - 1.5.5. Tools
- 1.6. Green Public Contracting
  - 1.6.1. Legislation
  - 1.6.2. Green Procurement Handbook
  - 1.6.3. Public Procurement Guidance
  - 1.6.4. Public Procurement Plan 2018-2025
- 1.7. Carbon Footprint Calculation
  - 1.7.1. Carbon Footprint
  - 1.7.2. Types of Scope
  - 1.7.3. Methodology
  - 1.7.4. Tools
  - 1.7.5. Carbon Footprint Calculation
- 1.8. CO2 Emission Reduction Plans
  - 1.8.1. Improvement Plans: Supplies
  - 1.8.2. Improvement Plans: Demand
  - 1.8.3. Improvement Plans: Installations
  - 1.8.4. Improvement Plans: Equipment
  - 1.8.5. Emissions Offsets
- 1.9. Carbon Footprint Records
  - 1.9.1. Carbon Footprint Records
  - 1.9.2. Requirements Prior to Registration
  - 1.9.3. Documentation
  - 1.9.4. Registration Request
- 1.10. Good Circular Practices
  - 1.10.1. Methodology BIM
  - 1.10.2. Selecting Material and Equipment
  - 1.10.3. Maintenance
  - 1.10.4. Waste Management
  - 1.10.5. Reusing Material

## Module 2. Energy Audits and Certification

- 2.1. Energy Audits
  - 2.1.1. Energy Diagnostics
  - 2.1.2. Energy Audits
  - 2.1.3. ESE Energy Audits

- 2.2. Competencies of an Energy Auditor
  - 2.2.1. Personal Attributes
  - 2.2.2. Knowledge and Skills
  - 2.2.3. Skill Acquisition, Maintenance and Improvement
  - 2.2.4. Certifications
  - 2.2.5. List of Energy Service Providers
- 2.3. Energy Audits in Building Construction: UNE-EN 16247-2
  - 2.3.1. Preliminary Contact
  - 2.3.2. Field Work
  - 2.3.3. Analysis
  - 2.3.4. Report
  - 2.3.5. Final Presentation
- 2.4. Auditing Measurement Tools
  - 2.4.1. Network Analyzer and Clamp Ammeters
  - 2.4.2. Luxmeter
  - 2.4.3. Thermohygrometer
  - 2.4.4. Anemometer
  - 2.4.5. Combustion Analyser
  - 2.4.6. Thermographic Camera
  - 2.4.7. Transmittance Meter
- 2.5. Investment Analysis
  - 2.5.1. Preliminary Considerations
  - 2.5.2. Noise Assessment Criteria
  - 2.5.3. Cost Study
  - 2.5.4. Grants and Subsidies
  - 2.5.5. Recovery Period
  - 2.5.6. Optimal Profitability Level
- 2.6. Managing Contracts with Energy Services Companies
  - 2.6.1. Energy Efficiency Services: UNE-EN 15900
  - 2.6.2. First Service: Energy Management
  - 2.6.3. Second Service: Maintenance
  - 2.6.4. Third Service: Total Guarantee
  - 2.6.5. Fourth Service: Facility Improvement and Renovation
  - 2.6.6. Fifth Service: Savings and Renewable Energy Investments

- 2.7. Certification Programs: HULC
  - 2.7.1. HULC Program
  - 2.7.2. Data Prior to Calculation
  - 2.7.3. Practical Case Example: Residential Case
  - 2.7.4. Practical Case Example: Small Tertiary Case
  - 2.7.5. Practical Case Example: Large Tertiary
- 2.8. Certification Programs: CE3X,
  - 2.8.1. CE3X Program
  - 2.8.2. Data Prior to Calculation
  - 2.8.3. Practical Case Example: Residential Case
  - 2.8.4. Practical Case Example: Small Tertiary Case
  - 2.8.5. Practical Case Example: Large Tertiary
- 2.9. Certification Programs: CERMA
  - 2.9.1. CERMA Program
  - 2.9.2. Data Prior to Calculation
  - 2.9.3. Practical Case Example: New Construction
  - 2.9.4. Practical Case Example: Existing Buildings
- 2.10. Certification Programs: Others
  - 2.10.1. Variety in Energy Calculation Programs Use
  - 2.10.2. Other Certification Programs

### Module 3. Bioclimatic Architecture

- 3.1. Materials Technology and Construction Systems
  - 3.1.1. Bioclimatic Architecture Evolution
  - 3.1.2. Most Used Materials
  - 3.1.3. Constructive Systems
  - 3.1.4. Thermal Bridges
- 3.2. Enclosures, Walls and Roofs
  - 3.2.1. The Role of Enclosures in Energy Efficiency
  - 3.2.2. Vertical Enclosures and Materials Used
  - 3.2.3. Horizontal Enclosures and Materials Used
  - 3.2.4. Flat Roofs
  - 3.2.5. Sloping Roofs

- 3.3. Openings, Glazing and Frames
  - 3.3.1. Types of Openings
  - 3.3.2. The Role of Openings in Energy Efficiency
  - 3.3.3. Materials Used
- 3.4. Solar Protection
  - 3.4.1. Need for Solar Protection
  - 3.4.2. Solar Protection Systems
    - 3.4.2.1. Awnings
    - 3.4.2.2. Slats
    - 3.4.2.3. Overhangs
    - 3.4.2.4. Setbacks
    - 3.4.2.5. Other Protection Systems
- 3.5. Bioclimatic Strategy in Summer
  - 3.5.1. The Importance of Utilizing Shade
  - 3.5.2. Bioclimatic Construction Techniques for Summer
  - 3.5.3. Good Building Practices
- 3.6. Bioclimatic Strategy for Winter
  - 3.6.1. The Importance the Utilizing the Sun
  - 3.6.2. Bioclimatic Construction Techniques for Winter
  - 3.6.3. Construction Examples
- 3.7. Canadian Wells. Trombe Wall. Vegetable Covers
  - 3.7.1. Other Forms of Energy Utilization
  - 3.7.2. Canadian Wells
  - 3.7.3. Trombe Wall
  - 3.7.4. Vegetable Covers
- 3.8. The Importance of Building Orientation
  - 3.8.1. The Wind Rose
  - 3.8.2. Building Orientations
  - 3.8.3. Examples of Bad Practices







- 3.9. Healthy Buildings
  - 3.9.1. Air Quality
  - 3.9.2. Lighting Quality
  - 3.9.3. Thermal Insulation
  - 3.9.4. Acoustic Insulation
  - 3.9.5. Sick Building Syndrome
- 3.10. Bioclimatic Architecture Examples
  - 3.10.1. International Architecture
  - 3.10.2. Bioclimatic Architecture

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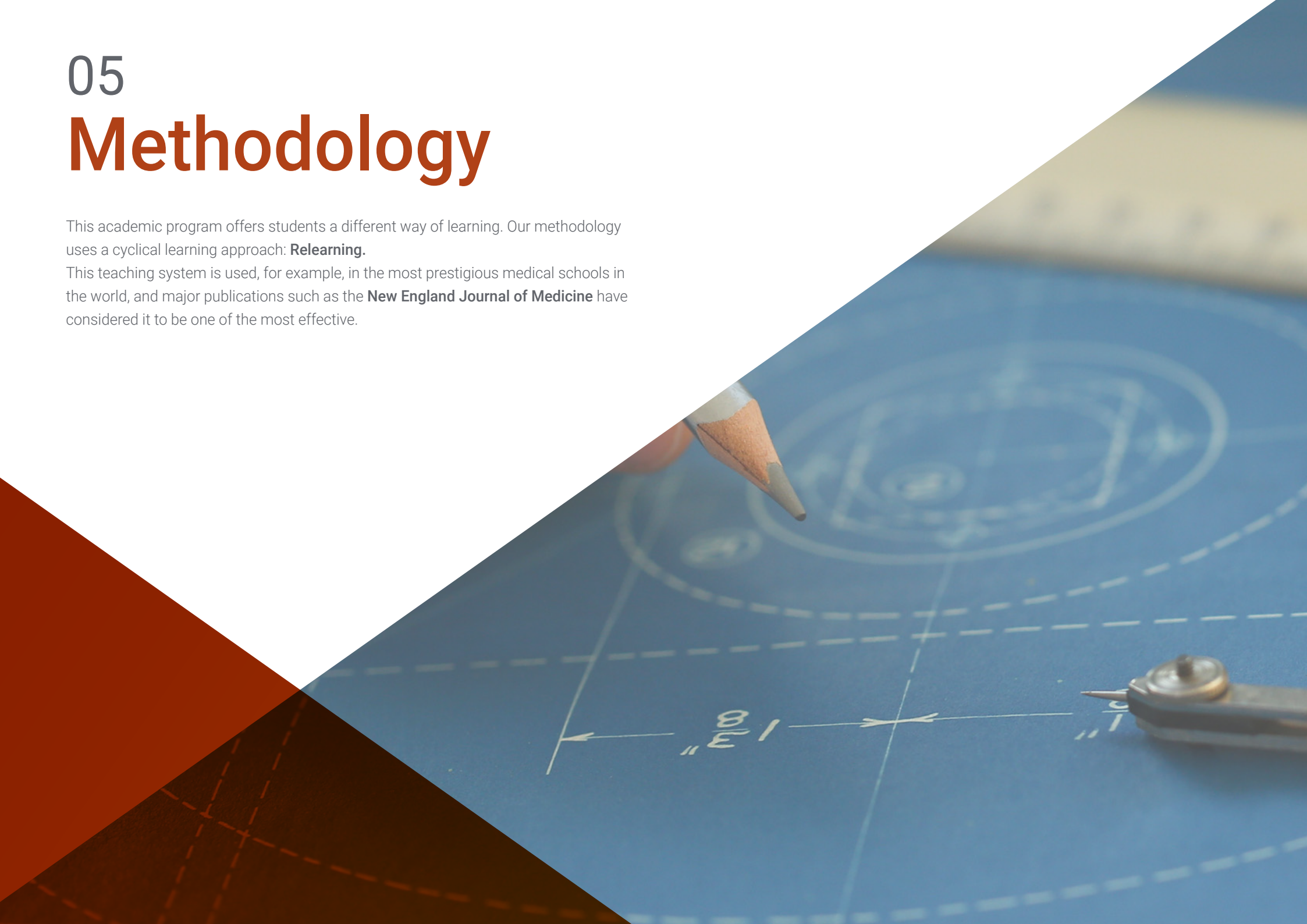
*This program will allow you to advance in your career comfortably”*

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.*



*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.





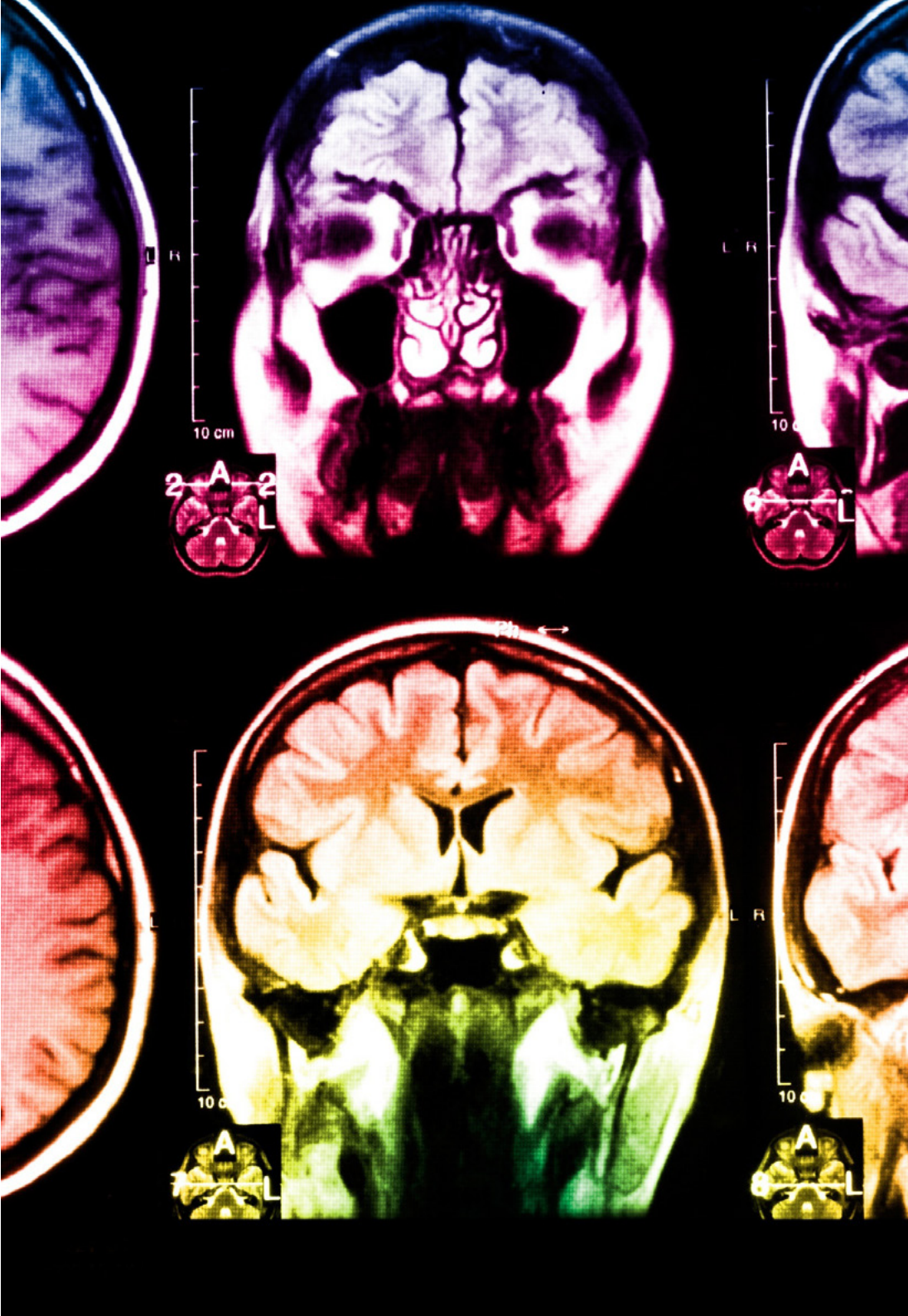
In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

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

This Postgraduate Diploma in Sustainable Development in the Construction of Buildings guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.





*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 Diploma in Sustainable Development in the Construction of Buildings** 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 Diploma in Sustainable Development in the Construction of Buildings**

Modality: **online**

Duration: **6 months**

Accreditation: **18 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

online

development

languages

virtual classroom

**tech** global  
university

## Postgraduate Diploma Sustainable Development in the Construction of Buildings

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