Postgraduate Certificate

Production and Generation of Electricity from Wind and Tidal Potential

tech technological university

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Postgraduate Certificate

Production and Generation of Electricity from Wind and Tidal Potential

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

Website: **www.techtitute.com/pk/engineering/postgraduate-certificate/production-generation-electricity-wind-tidal-potential**

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01

Introduction

This program takes an in-depth look at wind and tidal resource variables and how they influence electricity generation. Therefore, it addresses the operation of wind turbines and how they are affected by the different operating variables to which they are subjected. Likewise, it delves into the generation of electricity thanks to offshore wind energy. Therefore, the program is completed with a breakdown of the state-of-the-art technology and techniques of wave power generation plants.

You will learn all about the components and operation of an offshore wind power plant, whose momentum has been growing in recent years"

In this course, the characteristics of wind and how it can be harnessed to generate electricity are explained. Thus, the variables of the wind resource and how it influences electricity generation are analyzed. Therefore, it addresses the operation of wind turbines and how they are affected by the different operating variables to which they are subjected. Likewise, it delves into the study of the different parts that make up the wind turbines, and the auxiliary systems associated with them.

Due to the current proliferation of wind farms, the feasibility of building a wind farm will be broken down, from its location to the expected energy production.

On the other hand, the use of offshore wind power for electricity generation is being promoted lately, so TECH will pay special attention to the components of this type of power plant, which, although the basis of operation is the same, differ significantly from conventional wind farms.

A fundamental part of offshore wind farms are the wind turbine supports, so the different types currently existing will be discussed in depth in order to make a technical-economic comparison between them. And as this is an expanding resource, we will discuss power generation plants associated with other types of marine resources, such as waves, oceanic gradients, the osmotic gradient and the use of marine currents.

Finally, the program is completed with a breakdown of the state-of-the-art technology and techniques of wave power generation plants.

In addition, as it is a 100% online Postgraduate Certificate, it provides the student with the ease of being able to take it comfortably, wherever and whenever they want. All you need is a device with internet access to take your career one step further. A modality in line with the current times with all the guarantees to position the professional in a highly demanded area in continuous change, in line with the SDGs promoted by the UN.

This **Postgraduate Certificate in Production and Generation of Electricity from Wind and Tidal Potential** contains the most complete and up-to-date scientific program on the market. The most important features of the program include:

- The development of case studies presented by experts in electrical engineering
- The deepening in Energy Resources Management
- The graphic, schematic, and eminently practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where self-assessment can be used to improve learning.
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

Thanks to this course you will learn how to plan the construction of a wave power plant"

Thanks to this TECH program, you will successfully apply the different working techniques for the execution of wind turbines"

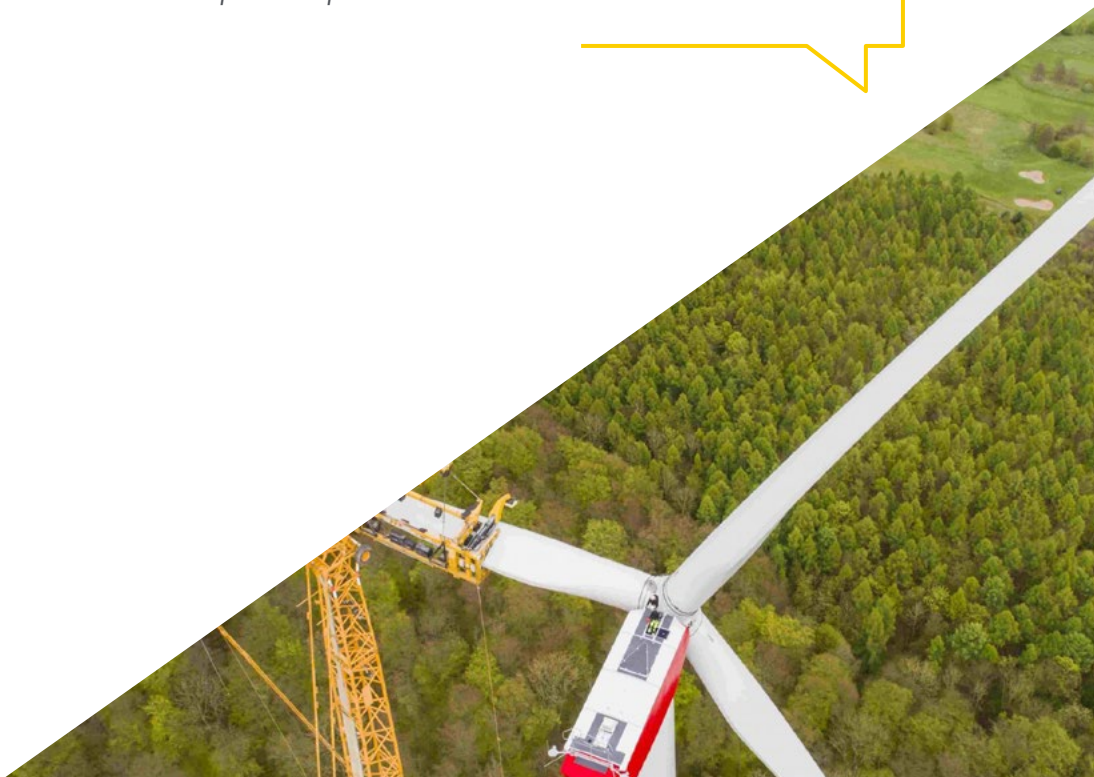
This program gives you the tools to know how to evaluate the performance of a wind turbine and the latest trends in wind power generation.

You will know how to diagnose the equipment necessary to successfully build offshore wind power plants thanks to excellent content.

The program's teaching staff includes professionals from the sector who contribute their work experience to this training program, as well as renowned specialists from leading societies 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 an immersive training program designed 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 during the academic year. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts.



02

Objectives

The Postgraduate Certificate in Production and Generation of Electricity from Wind and Tidal Potential is aimed at providing students with the necessary skills in relation to these energy systems, with the latest updates and the most innovative aspects of the sector. In this way, we propose a specific and complete syllabus with quality content that, together with the guidance of experts, will enable the professional to achieve the following objectives.

One of your objectives of this Postgraduate Certificate will be to know in detail and know how to interpret data from meteorological stations to analyze the potential of a wind farm"

General Objectives

- Interpret the investments and feasibility of power generation plants
- Discover the potential business opportunities offered by electricity generation infrastructures
- Delve into the latest trends, technologies and techniques in electric power generation
- Identify the components necessary for the correct functionality and operation of the facilities that make up the power generation plants
- Establish preventive maintenance plans that ensure and guarantee the proper operation of the power plants, taking into account human and material resources, the environment and the most rigorous quality standards
- Successfully manage maintenance plans for power generation plants
- Analyze the different productivity techniques existing in power generation plants, taking into account the particular characteristics of each facility
- Select the most appropriate contracting model according to the characteristics of the power plant to be built

Specific Objectives

- Identify suitable locations for the construction of wind farms
- Detailed knowledge and interpretation of data from meteorological stations to analyze the potential of a wind farm
- Control and prepare the working environment in wind turbines
- Apply the different working techniques for the execution of wind turbines
- Evaluate the operation of a wind turbine and the latest trends in wind power generation
- Elaborate and promote the feasibility of wind power generation parks
- Diagnose the equipment necessary to build offshore wind power plants
- Locate marine resources for electric power generation
- Plan the construction of a wave energy power generation plant

With this program you will know how to locate marine resources for power generation with total success"

03

Course Management

TECH University, in its maxim of offering an elite education for all, has renowned teachers, professionals in the sector so that the student acquires a solid knowledge in the production and generation of electric energy taking advantage of the wind and tidal potential with rigor. Therefore, this program has a highly qualified professional with extensive experience in the industry, whose trajectory has positioned them as great executives within the sector In this way, it will offer the best tools to students in the development of their skills during the course, with the guarantees required to specialize in a sector in full update and innovation, so they will reflect on the different energy production technologies with accuracy and precision to apply it in the transition to a quality and sustainable industry, which uses natural resources efficiently.

Offers you this unique program in the market, with the best content and an expert teaching staff to help you achieve your work goals successfully"

Management

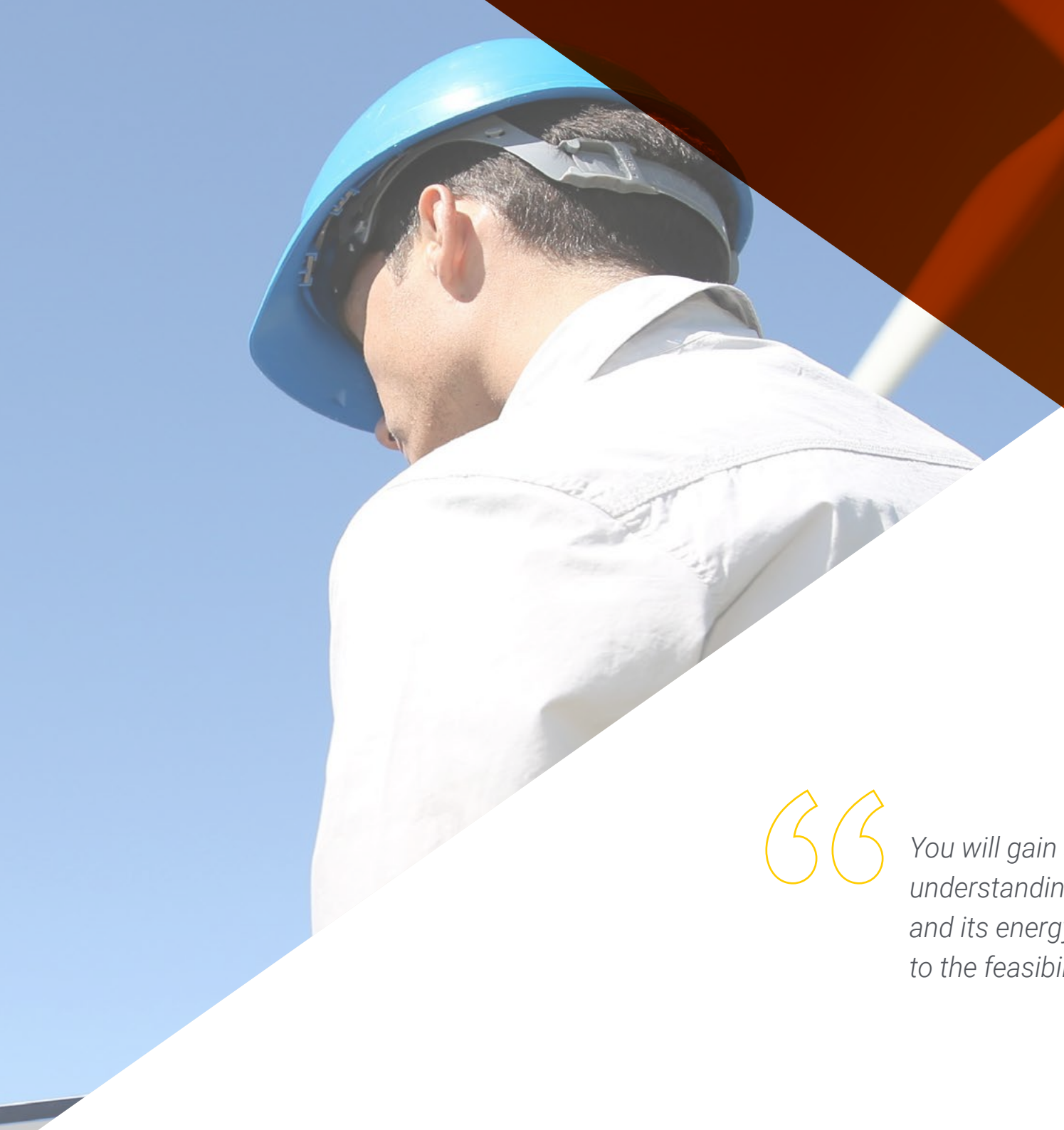
Mr. Palomino Bustos, Raúl

- Director at the Institute for Technical Training and Innovation
- International Consultant in Engineering, Construction and Maintenance of Energy Production Plants for the company RENOVETEC
- Technological/training expert recognized and accredited by the State Public Employment Service
- Industrial Engineer, University of Carlos III in Madrid
- Industrial Technical Engineer by the EUITI of Toledo
- Master's Degree in Occupational Risk Prevention from the Francisco de Vitoria University
- Master's Degree in Quality and Environment by the Spanish Quality Association

04

Structure and Content

The structure of the contents of this program has been designed by engineering professionals focused on the production and generation of electric energy taking advantage of the wind and tidal potential, thanks to the fact that they have poured their knowledge and experience into a complete and updated syllabus, oriented towards the sustainability of the sector and the use of these resources. The syllabus includes information on the functionality of wind and ocean waves as energy generators through the technology that makes it possible. Therefore, this curriculum is essential to move towards a more sustainable industry that takes advantage of natural resources with awareness and efficiency, providing the knowledge that professionals need to be competent in their day-to-day work in this sector.



You will gain a thorough understanding of the wind resource and its energy possibilities all the way to the feasibility of a wind farm!"

Module 1. Solar Generation

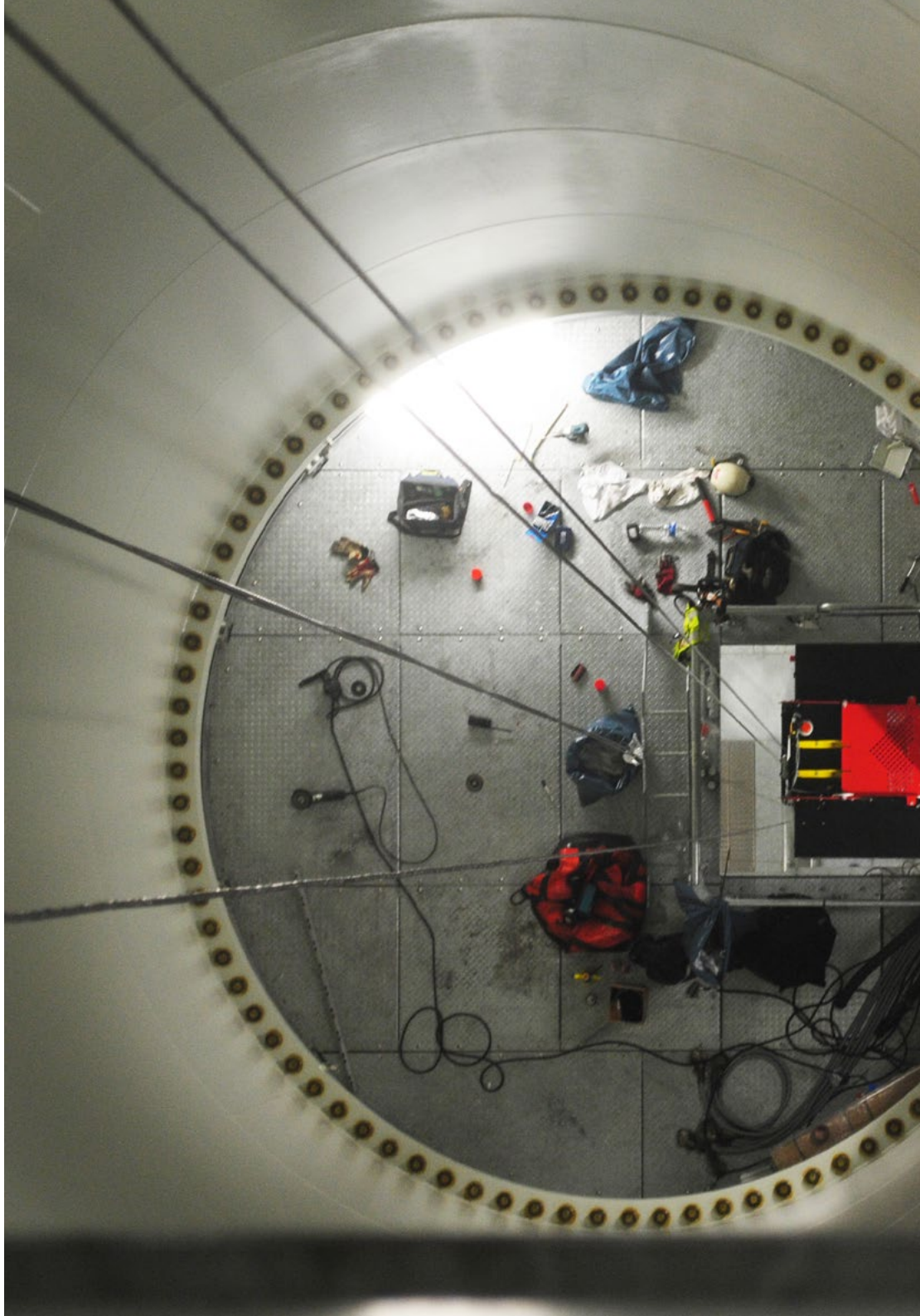
1.1. The Wind
- 1.1.1 Origin 1.1.2 Horizontal Gradient
- 1.1.3. Measure
- 1.1.4. Obstacles

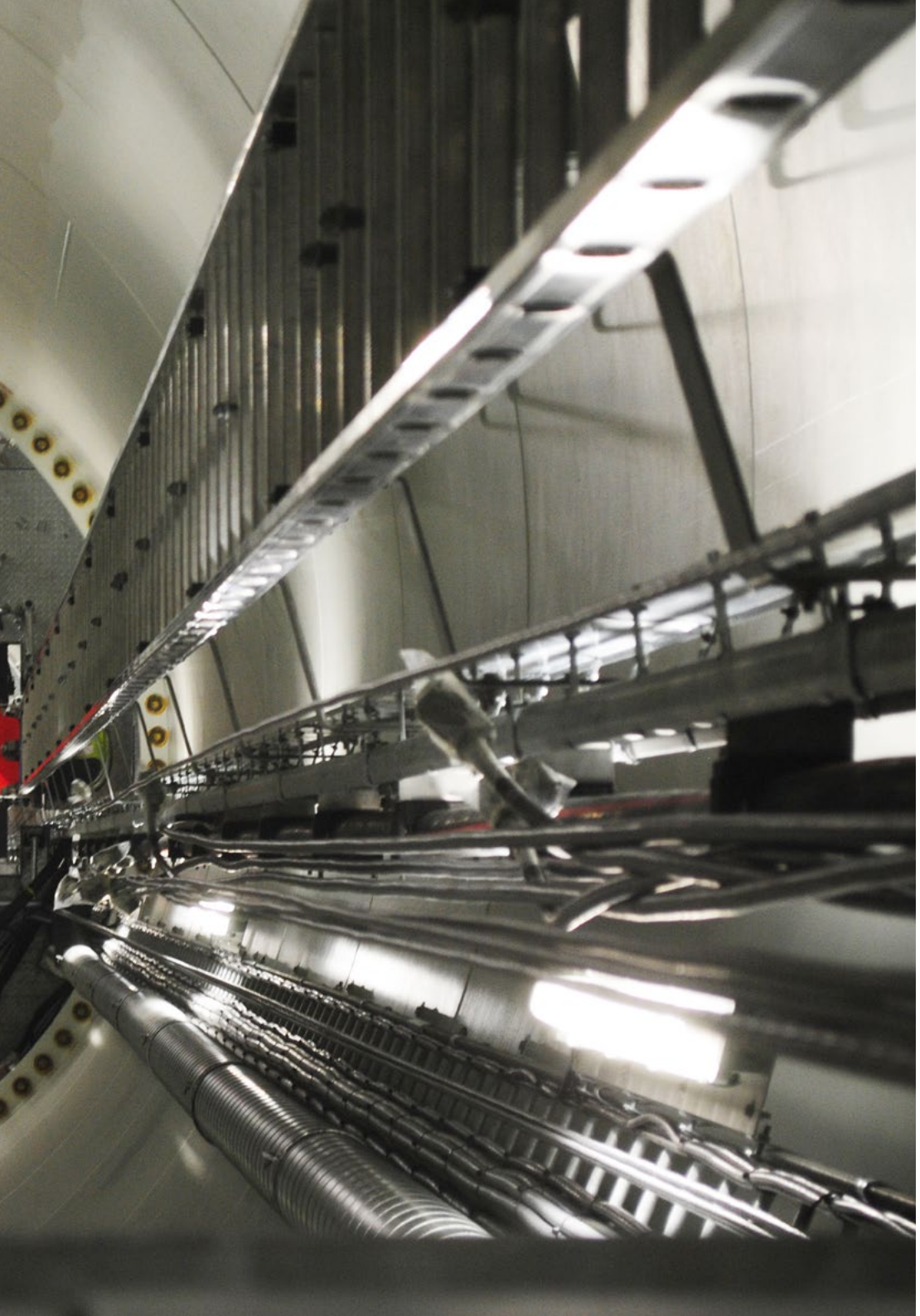
1.2. Wind Resource
- 1.2.1 Wind Measurement
- 1.2.2. The Compass Rose
- 1.2.3. Factors that Affect the Wind

1.3. Wind Turbine Study
- 1.3.1. Betz Limit
- 1.3.2. The Rotor of a Wind Turbine
- 1.3.3. Electrical Power Generated
- 1.3.4. Power Regulation

1.4. Wind Turbine Components
- 1.4.1. Tower
- 1.4.2. Rotor
- 1.4.3. Multiplier Box
- 1.4.4. Brakes

1.5. Wind Turbine Operation
- 1.5.1. Generation System
- 1.5.2. Direct and Indirect Connection
- 1.5.3. Control System
- 1.5.4. Tendencies





1.6. Feasibility of a Wind Farm
- 1.6.1. Location
- 1.6.2. Wind Resource Study
- 1.6.3. Energy Production
- 1.6.4. Economic Study

1.7. Offshore Wind: Offshorre Technology
- 1.7.1. Wind Turbine
- 1.7.2 Foundations 1.7.3. Electric Conection
- 1.7.4. Installation Vessels
- 1.7.5. ROVs

1.8. Offshore Wind: Wind Turbine Support
- 1.8.1. Hywind Scotland, Statoil Platform Spar
- 1.8.2. WinfFlota; Principal Power Platform Semisub Plataform GICON SOF TLP
- 1.8.3. Comparison

1.9. Marine Energy
- 1.9.1. Tidal Energy
- 1.9.2. Oceanic Gradient Energy (OTEC)
- 1.9.3. Energy of the Saline or Osmotic Gradient
- 1.9.4. Energy from Ocean Currents

1.10. Wave Energy
- 1.10.1. Waves as a Source of Energy
- 1.10.2. Classification of Conversion Technologies
- 1.10.3. Current Technology

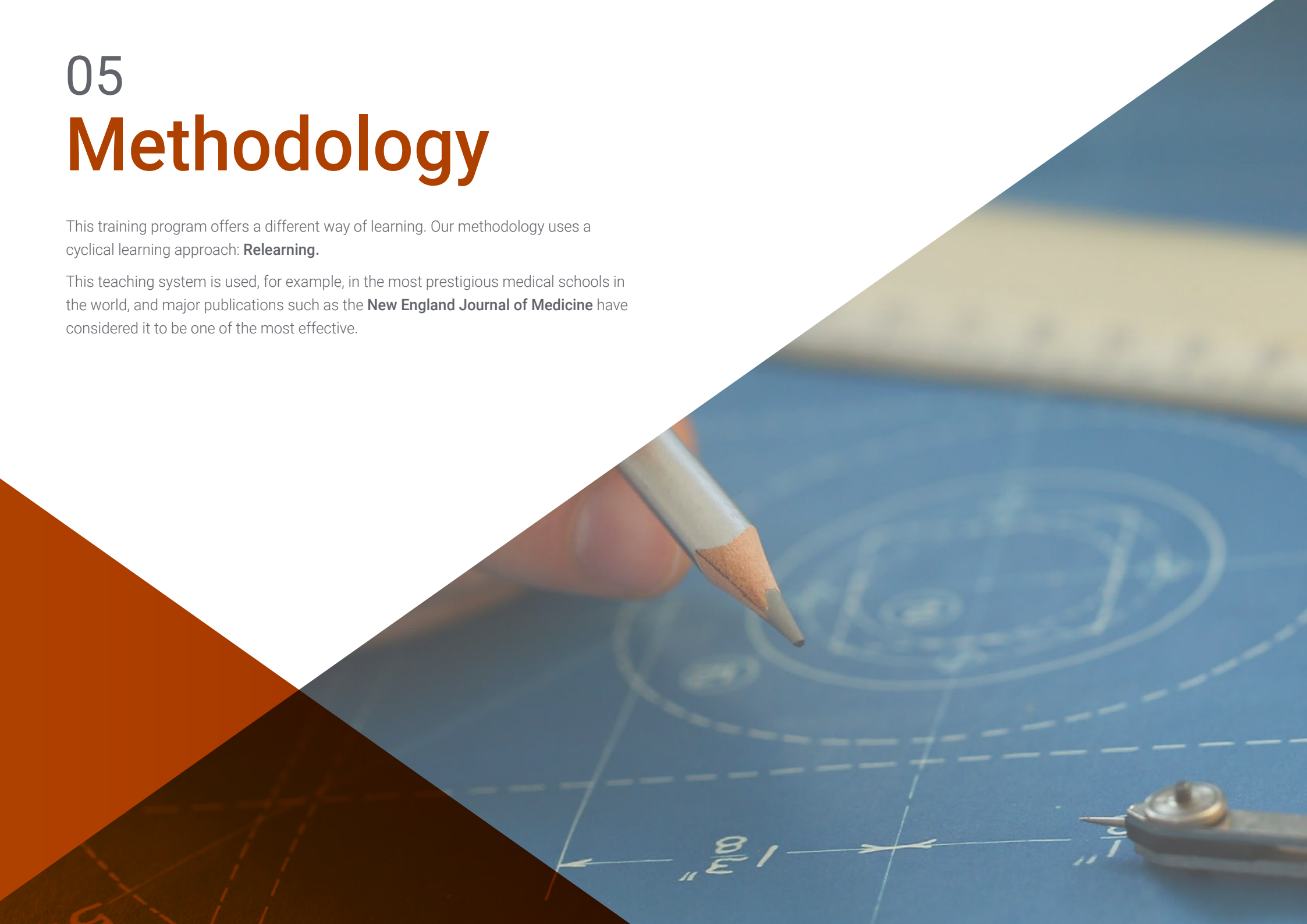
Master wave energy and control how waves become a booming source of energy"

05

Methodology

This training program offers 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"

At TECH we use the Case Method

Our program offers a revolutionary method of skills and knowledge development. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

At TECH, you will experience a way of learning that is shaking the foundations of traditional universities around the world"

We are the first online university to combine Harvard Business School case studies with a 100% online learning system based on repetition.

The student will learn, through collaborative activities and real cases, how to solve complex situations in real business environments.

A learning method that is different and innovative.

This intensive Engineering program at TECH Technological University prepares you to face all the challenges in this field, both nationally and internationally. We are committed to promoting your personal and professional growth, the best way to strive for success, that is why at TECH Technological University you will use Harvard case studies, with which we have a strategic agreement that allows us, to offer you material from the best university in the world.

> *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 by 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

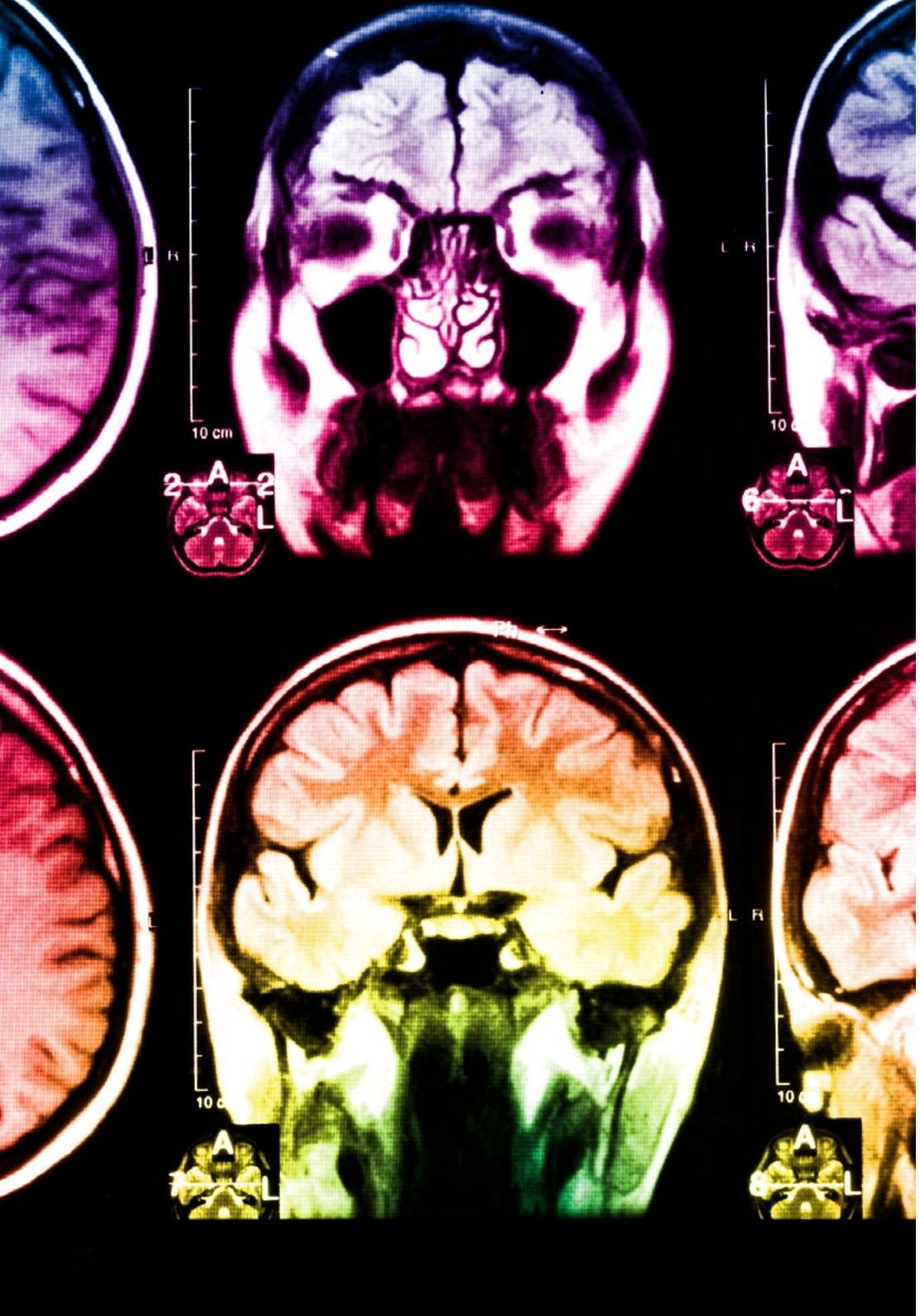
TECH is the first university in the world to combine Harvard University case studies with a 100% online learning system based on repetition, which combines 8 different didactic elements in each lesson.

We enhance Harvard case studies 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 university 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

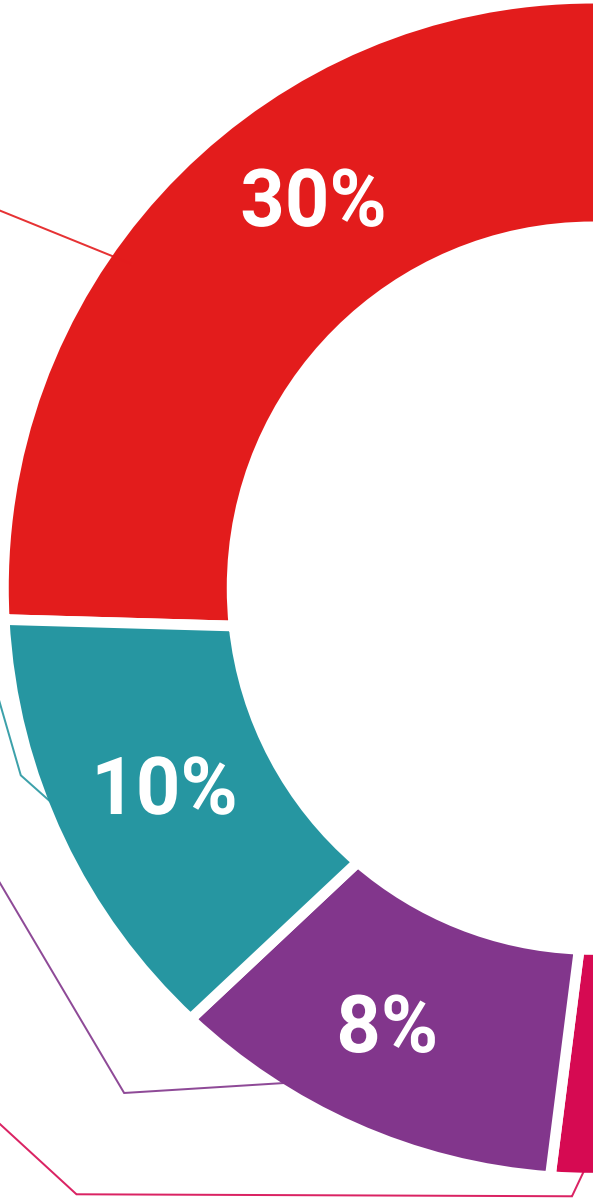
There is scientific evidence suggesting that observing third-party experts can be useful. Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

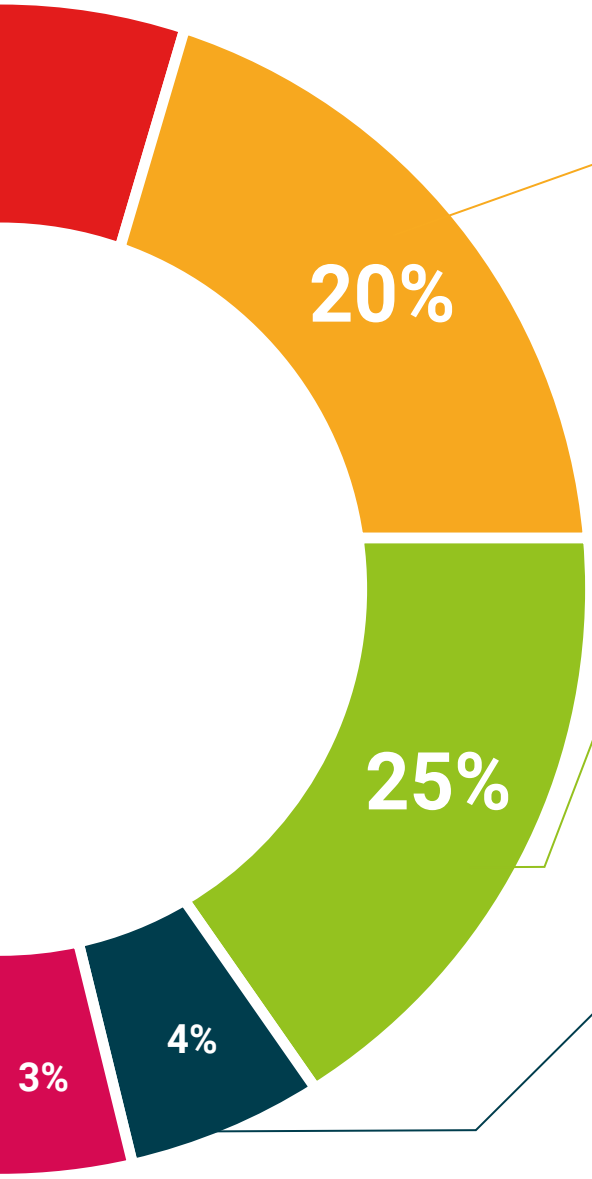
Practising Skills and Abilities

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

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

They will complete a selection of the best case studies in the field used at Harvard. Cases that are presented, analyzed, and supervised by the best senior management 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 multimedia content presentation training Exclusive system 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 your goals.

06

Certificate

The Postgraduate Certificate in Production and Generation of Electricity from Wind and Tidal Potential guarantees you, in addition to the most rigorous and up-to-date training, access to a Postgraduate Diploma issued by a prestigious university: TECH Technological University.

Learn about the potential of wind and tidal power as electricity generators thanks to this degree offered by TECH"

This **Postgraduate Certificate in Production and Generation of Electricity from Wind and Tidal Potential** contains the most complete and up-to-date scientific 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 though the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Production and Generation of Electricity from Wind and Tidal Potential**

Official Nº of hours: **1,500 h.**


tech technological university

Awards the following

CERTIFICATE

to

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

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Production and Generation of Electricity from Wind and Tidal Potential

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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Postgraduate Certificate

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