Postgraduate Diploma
Execution of Construction Works

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Postgraduate Diploma
Execution of Construction Works

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

Website: **www.techtitute.com/pk/engineering/postgraduate-diploma/postgraduate-diploma-execution-construction-works**

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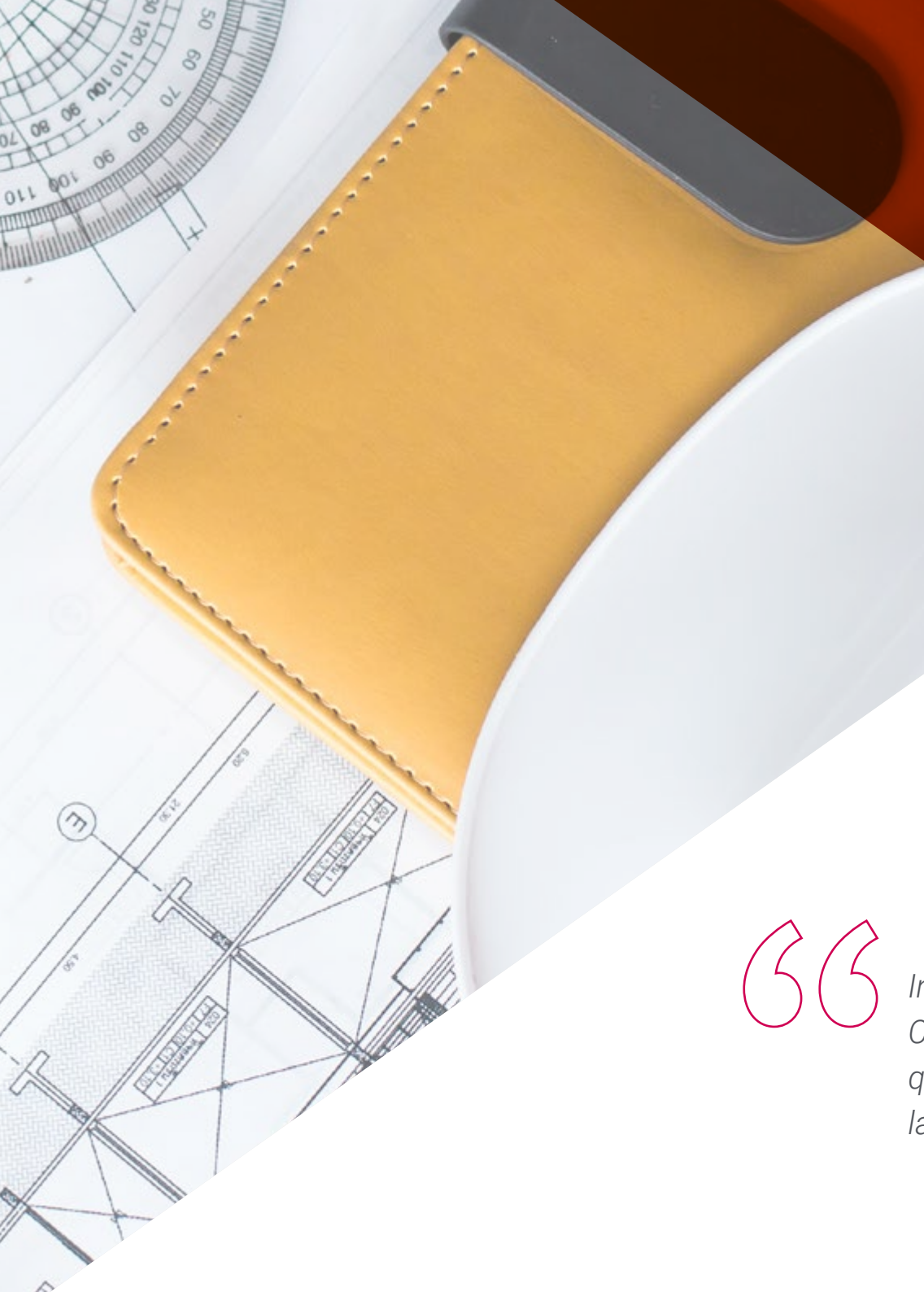
01

Introduction

The Civil Engineering sector is one of the main pillars of world economies, both for its economic impact and for the structuring of the territory, which is essential for modern economies to develop at the pace imposed by the world economic order. With this specialization TECH offers all the knowledge that the student needs to put into practice the execution of works following the latest developments and regulations of the sector and with the least possible environmental impact.



In order to carry out a correct Execution of Construction Works it is necessary to have highly qualified engineers, capable of implementing the latest advances in the field to their daily practice".

Civil engineering covers a wide field of intervention and all the processes before and after the construction itself. In this Postgraduate Diploma, students will delve into the study of the execution of works, whether linear, hydraulic, maritime, airport or renewable energy, among others.

Linear works include road and rail works. They develop state-of-the-art construction methods for viaducts and tunnels, as well as machinery and new technologies applied specifically for the sector.

Specifically, the training program includes the earthmoving work necessary for the execution of a linear work, with special mention of the type of machinery to be used depending on the terrain to be encountered, planning and management of earthmoving equipment, control of the work carried out using topographic methods and drone technology, and the quality control necessary for the performance of these tasks.

The importance of the drainage of this type of infrastructure will also be explained, providing in the agenda a series of action guidelines that will be very useful for the optimization of the result of the work.

Hydraulic works, on the other hand, are another sector in which the civil engineering professional finds a niche with great possibilities. In this field, we will deal with works on dams, pipelines, canals, WWTP, DWTP and actions on watercourses. The focus will be on the technology linked to this field and knowledge of debugging processes or special parts to be used will be updated. The typologies of gravity and pressure pipelines will be studied, explaining the main differences in the execution of these works.

Finally, this Postgraduate Diploma will take a look at another historical sector in this field, that of ports. Aspects of maritime climate in different seas and oceans to be taken into account for internationalization will be analyzed. The training program also includes the study of airport issues, the industrial sector and renewable energies, which are a focus of investment in the coming years.

One of the strong points of this specialization is that the most appropriate machinery and technologies for each sector will be presented, taking into account the latest advances in the field.

It should be noted that since it is a 100% online Postgraduate Diploma, the student is not conditioned by fixed schedules or the need to move to another physical location, but can access the contents at any time of the day, balancing their work or personal life with their academic life.

This **Postgraduate Diploma in Execution of Construction Works** contains the most complete and up-to-date educational program on the market. The most important features of the specialization are:

- The development of case studies presented by experts in infrastructure and civil engineering.
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice.
- Practical exercises where self-assessment can be used to improve learning.
- Special emphasis on innovative methodologies in the Execution of Construction Works
- 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

The completion of this Postgraduate Diploma will place civil engineering professionals at the forefront of the latest developments in the sector."

This Postgraduate Diploma is the best investment you can make in selecting an up-to-date program in the field of civil engineering. We offer you quality and free access to content"

This specialisation comes with the best didactic material, providing you with a contextual approach that will facilitate your learning"

This 100% online Postgraduate Diploma will allow you to combine your studies with your professional work. You choose where and when to train"

It includes, in its teaching staff, professionals belonging to the field of civil engineering, who pour into this training the experience of their work, in addition to recognized specialists from reference 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 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 during the academic year. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts in Execution of Construction Works.

02

Objectives

The Postgraduate Diploma in the Execution of Construction Works is oriented to facilitate the performance of the professional to acquire and know the main novelties in this field, which will allow him to practice his profession with the highest quality and professionalism.

Our goal is to make you the best professional in your sector. And for this we have the best methodology and content"

General Objectives

- Acquire new knowledge in Civil Engineering and Infrastructures.
- Acquire new skills in terms of new technologies, latest machinery and software, knowledge of next steps and recycling.
- Extrapolate this knowledge to other sectors of the industry, focusing on those fields that require more trained and qualified personnel year after year.
- Processing the data generated in Civil Engineering activities, through the BIM environment, a mandatory reality for the drafting, construction, management and operation of infrastructures.

Take the step to get up to date on the latest developments in the Execution of Construction Works

Specific Objectives:

- Develop knowledge of the latest earthmoving machinery available for earthmoving operations
- Train students in earthwork construction processes for linear works.
- Provide training on the necessary analysis, prior to the start of the works, in terms of hydrology and hydraulics to optimize the drainage of the work.
- Train for the analysis of existing geotechnical engineering for the optimization of existing foundations
- Analyze the different types of structures that exist in linear works such as underpasses, overpasses and viaducts.
- Have knowledge of the signage required for the execution of the linear work.
- Development of the type of signaling installed in different types of railway projects (ERTMS).
- Training in the track devices available on the market
- Train the student about the current environmental legislation in environmental matters, in order to undertake a linear work.
- Train for the wide range of hydraulic works in the field of civil engineering.
- Know the appropriate machinery and construction processes for gravity and pressure piping works.
- Access to the special parts available on the market for application in pipeline works.
- Training on the particularities, appropriate machinery and construction processes of canals and dams works.
- Know the particularities, suitable machinery and construction processes of channeling works.
- Know the particularities, appropriate machinery and construction processes of WWTP, DWTP and irrigation works.
- Know the theory of maritime climate
- Execute works in ports
- Construction of Vertical Dikes
- Construction of Breakwater dikes
- Understand beach dynamics
- Know the equilibrium profiles on beaches
- Execution works on the coast
- Training in the dredging industry
- Know the machinery and construction processes in the dredging sector.
- Develop issues related to the particularities of the execution of works at airports, both from a technical and operational point of view.
- Focus on the development of works in the industrial and renewable energy sectors.
- Present the latest trends in the field of R&D&I.
- Training in the industrialization sector of the civil works sector

03

Course Management

In TECH we have professionals specialized in each field of expertise, who pour the experience of their work into our training courses.

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

Management

Mr. Uriarte Alonso, Mario

- Civil Engineer from the University of Cantabria.
- Professional Master's Degree in Oceanographic Engineering
- 17 years of experience in the field of construction execution, having worked as construction manager in works of highways, airports, ports, canals, railways and hydroelectric works.
- In the engineering field, he is the CEO of Candois Ingenieros Consultores SL., a business dedicated to the drafting of projects and construction management.

Mr. Torres Torres, Julián

- Civil Engineer from the University of Cantabria.
- Professional Master's Degree in Oceanographic Engineering
- 17 years of experience in the field of construction execution, having worked as construction manager in works of highways, airports, ports, canals, railways and hydroelectric works.
- In the engineering field, he is the CEO of Candois Ingenieros Consultores SL., a business dedicated to the drafting of projects and construction management.

Professors

Mr. Gámiz Ruíz, Juan José

- Civil Engineer, University of Granada.
- Professional Master's Degree in Structural Calculation
- 12 years of experience in the engineering field providing services for the administration and developing engineering work as an independent freelancer in projects and construction management.

Mr. López Puerta, Miguel Ángel

- Civil Engineer of Roads, Canals and Ports
- Professional Master's Degree in Structural Calculation
- 2 years of experience in the field of Engineering specialized in the drafting of projects

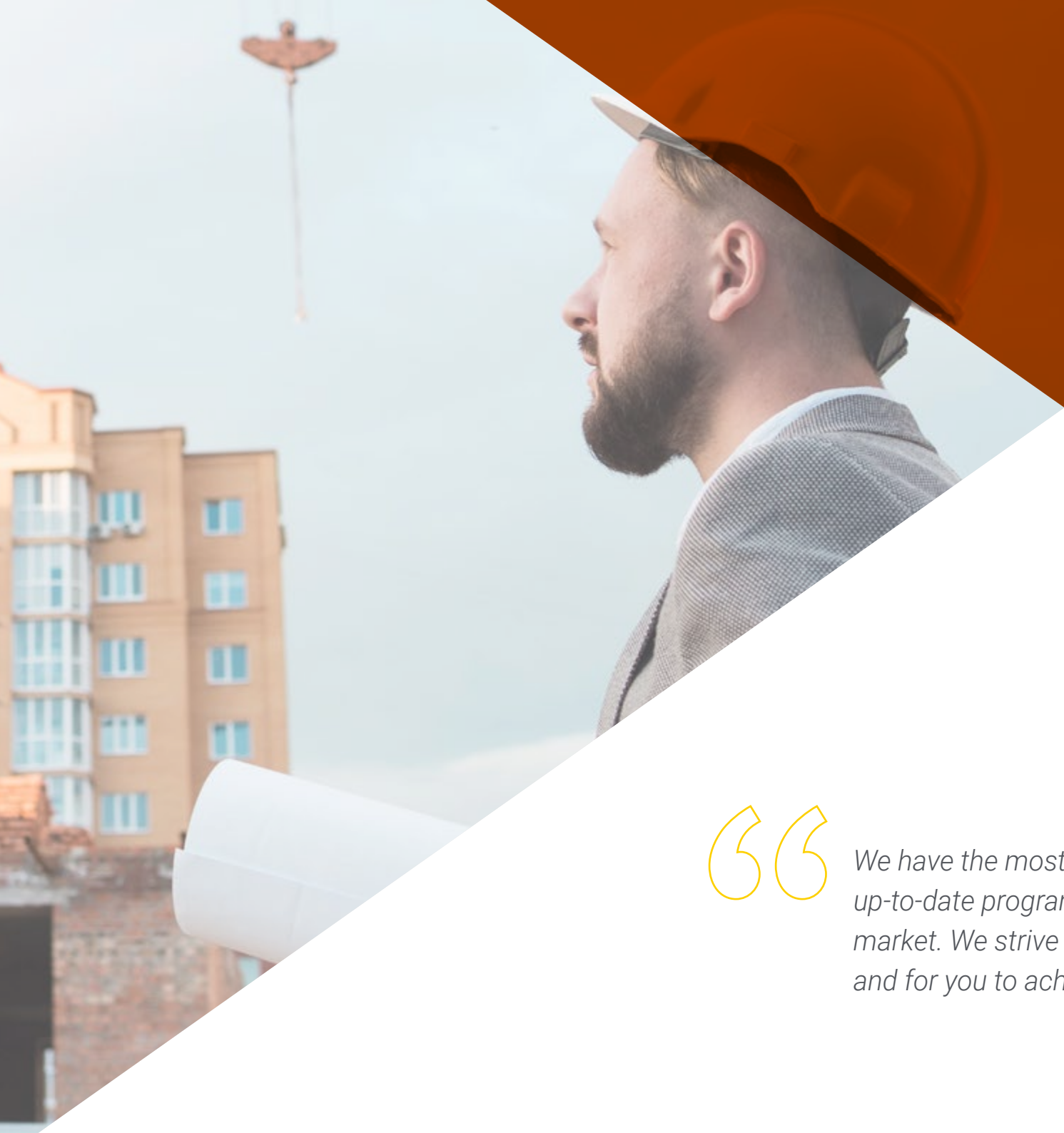
Mr. Uriarte Alonso, Mario

- Civil Engineer from the University of Cantabria.
- Professional Master's Degree in Oceanographic Engineering
- 17 years of experience in the field of construction execution, having worked as construction manager in works of highways, airports, ports, canals, railways and hydroelectric works.
- In the engineering field, he is the CEO of Candois Ingenieros Consultores SL., a business dedicated to the drafting of projects and construction management.

04

Structure and Content

The structure of the contents has been designed by the best professionals in the civil engineering sector, with extensive experience and recognized prestige in the profession, and aware of the benefits that the latest educational technology can bring to higher education.



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

Module 1. Linear Works

1.1. Types of Linear Works
- 1.1.1. Road Works
- 1.1.2. Railroad Works
- 1.1.3. Bridges
- 1.1.4. Tunnels.

1.2. Earthwork
- 1.2.1. Soil Analysis
- 1.2.2. Dimensioning of the Necessary Machinery
- 1.2.3. Control and Monitoring Systems
- 1.2.4. Quality Control
- 1.2.5. Standards of Good Execution

1.3. Longitudinal and Transverse Drainage
- 1.3.1. Project Drainage Review
- 1.3.2. Recalculation and Optimization of Project Drainage
- 1.3.3. Execution of Cost Savings Study

1.4. Foundations
- 1.4.1. Analysis of the Geotechnical Study of the Project
- 1.4.2. Recalculation of Project Foundations
- 1.4.3. Preparation of the New Geotechnical Study
- 1.4.4. Discussion of New Geotechnical Study with the D.O.

1.5. Underpasses
- 1.5.1. Analysis of Existing Underpasses in the Project
- 1.5.2. Redimensioning in Terms of Drainage and Structural Capacity
- 1.5.3. Optimization of the Calculation
- 1.5.4. Optimization of Underpass
- 1.5.5. Discussion of New Structure with the D.O.

1.6. Overpasses
- 1.6.1. Analysis of Existing Overpasses in the Project
- 1.6.2. Redimensioning in Terms of Drainage and Structural Capacity
- 1.6.3. Optimization of the Calculation
- 1.6.4. Optimization of Overpass
- 1.6.5. Discussion of New Structure with the D.O.

1.7. Viaducts
- 1.7.1. Analysis of the Existing Viaducts in the Project
- 1.7.2. Redimensioning in Terms of Drainage and Structural Capacity
- 1.7.3. Optimization of the Calculation
- 1.7.4. Optimization of Viaducts
- 1.7.5. Discussion of New Structure with the D.O.

1.8. Vertical and Horizontal Signage, Fenders and Additional Elements
- 1.8.1. Analysis of the Regulations Applied
- 1.8.2. Analysis of the Type and Quantity of Existing Signage in Projects
- 1.8.3. Optimization of Existing Signage
- 1.8.4. Analysis of Existing Defences and Optimization of Existing Defences
- 1.8.5. Noise Shield Analysis and Optimization
- 1.8.6. Preparation of a Report on the Optimization Performed
- 1.8.7. Discussion of Optimization Report with the D.O.

1.9. Railway Signaling and Track Equipment
- 1.9.1. Introduction to Railway Signaling
- 1.9.2. Signaling Systems Currently in Use
- 1.9.3. Introduction to Track Devices
- 1.9.4. Welded Long Bar
- 1.9.5. Track on Plate
- 1.9.6. Specific Machinery for Railway Works

1.10. Environmental, Social and Cultural Measures
- 1.10.1. Analysis of the Measures Included in the Project
- 1.10.2. Study of Current Legislation
- 1.10.3. Adequacy of PACMA
- 1.10.4. Analysis of Social and Archaeological Measures

Module 2. Hydraulic Works

2.1. Types of Hydraulic Works
- 2.1.1. Pressure Piping Works
- 2.1.2. Severity Pipeline Works
- 2.1.3. Canal Works
- 2.1.4. Dam Works
- 2.1.5. Works of Actions in Watercourses
- 2.1.6. WWTP and DWTP Works

2.2. Earthwork
- 2.2.1. Soil Analysis
- 2.2.2. Dimensioning of the Necessary Machinery
- 2.2.3. Control and Monitoring Systems
- 2.2.4. Quality Control
- 2.2.5. Standards of Good Execution

2.3. Severity Pipeline Works
- 2.3.1. Survey Data Collection in the Field and Data Analysis in the Office
- 2.3.2. Re-study of the Project Solution
- 2.3.3. Piping Assembly and Manhole Execution
- 2.3.4. Final Testing of Pipelines

2.4. Pressure Piping Works
- 2.4.1. Analysis of Piezometric Lines
- 2.4.2. Execution EBARS
- 2.4.3. Piping and Valve Assembly
- 2.4.4. Final Testing of Pipelines

2.5. Special Valve and Pumping Elements
- 2.5.1. Types of Valves
- 2.5.2. Types of Pumps
- 2.5.3. Boiler Making Elements
- 2.5.4. Special Valves

2.6. Canal Works
- 2.6.1. Types of Channels
- 2.6.2. Execution of Channels of Excavated Sections in the Ground
- 2.6.3. Type of Rectangular Cross-Section
- 2.6.4. Desanders, Sluice Gates and Loading Chambers
- 2.6.5. Auxiliary Elements (Gaskets, Sealants and Treatments)

2.7. Dam Works
- 2.7.1. Types of Dams
- 2.7.2. Earth Dams
- 2.7.3. Concrete Dams
- 2.7.4. Special Valves for Dams

2.8. Actions in the Channels
- 2.8.1. Types of Works in Watercourses
- 2.8.2. Channeling
- 2.8.3. Works for Channel Defences
- 2.8.4. River Parks
- 2.8.5. Environmental Measures in River Works

2.9. WWTP and DWTP Works
- 2.9.1. Elements of a WWTP
- 2.9.2. Elements of a WWTP
- 2.9.3. Water and Sludge Lines
- 2.9.4. Sludge Treatment
- 2.9.5. New Water Treatment Systems

2.10. Irrigation Works
- 2.10.1. Study of the Irrigation Network
- 2.10.2. Execution EBAR
- 2.10.3. Piping and Valve Assembly
- 2.10.4. Final Testing of Pipelines

Module 3. Maritime, Airport, Industrial and Renewable Energy Works and Other Sectors

3.1. Port Works
- 3.1.1. Current ROM Regulations
- 3.1.2. Marine Climate
- 3.1.3. Ports Executed with Sunken Caissons
- 3.1.4. Breakwater Dikes
- 3.1.5. Marinas

3.2. Coastal Works
- 3.2.1. Coastal Dynamics
- 3.2.2. Coastal Sediment Transport
- 3.2.3. Beach Equilibrium Profile
- 3.2.4. Exempt Dams on Coasts

3.3. Maritime Dredging and Earthmoving Works
- 3.3.1. Need for Dredging Works in Coasts and Ports
- 3.3.2. Machinery for the Execution of Dredging Works
- 3.3.3. Execution of Dredging Works

3.4. Work on Airports Runways and Taxiways
- 3.4.1. Regulations Applicable to Airport Works
- 3.4.2. Operation of Airport Works
- 3.4.3. Airport Signage
- 3.4.4. Restrictions on Work at Airports

3.5. Works at Terminal Airports
- 3.5.1. Execution Project Analysis
- 3.5.2. BIM Analysis of the Project
- 3.5.3. Airport Terminal Project Work Team

3.6. Works in the Industrial Sector
- 3.6.1. Industry Sectors of Reference
- 3.6.2. Civil works in the Industrial Sector
- 3.6.3. Application of BIM Methodology in the Industrial Sector
- 3.6.4. Working Methods for Industrial Projects

3.7. Works for Renewable Energy Projects Solar Farms
- 3.7.1. Design and Calculation of the Drainage Network
- 3.7.2. Design and Calculation of Roadways
- 3.7.3. Design and Calculation of Foundations
- 3.7.4. Preparation of Reports Applied to Energy Projects

3.8. Works for Renewable Energy Projects Wind Farms
- 3.8.1. Design and Calculation of the Drainage Network
- 3.8.2. Design and Calculation of Roadways
- 3.8.3. Design and Calculation of Foundations
- 3.8.4. Preparation of Reports Applied to Energy Projects

3.9. R&D&I Projects
- 3.9.1. Areas of Study for R&D&I Projects
- 3.9.2. Methodology of Work
- 3.9.3. Advantages of Project Development in the R&D&I Field
- 3.9.4. Added Value of R&D&I Projects for the Business

3.10. Industrialization of Civil Engineering
- 3.10.1. Current Status of Civil Engineering Industrialization
- 3.10.2. Sector Projection
- 3.10.3. Technologies Applicable to Civil Engineering Industrialization
- 3.10.4. Future and Prospects for the Industrialization of Civil Engineering

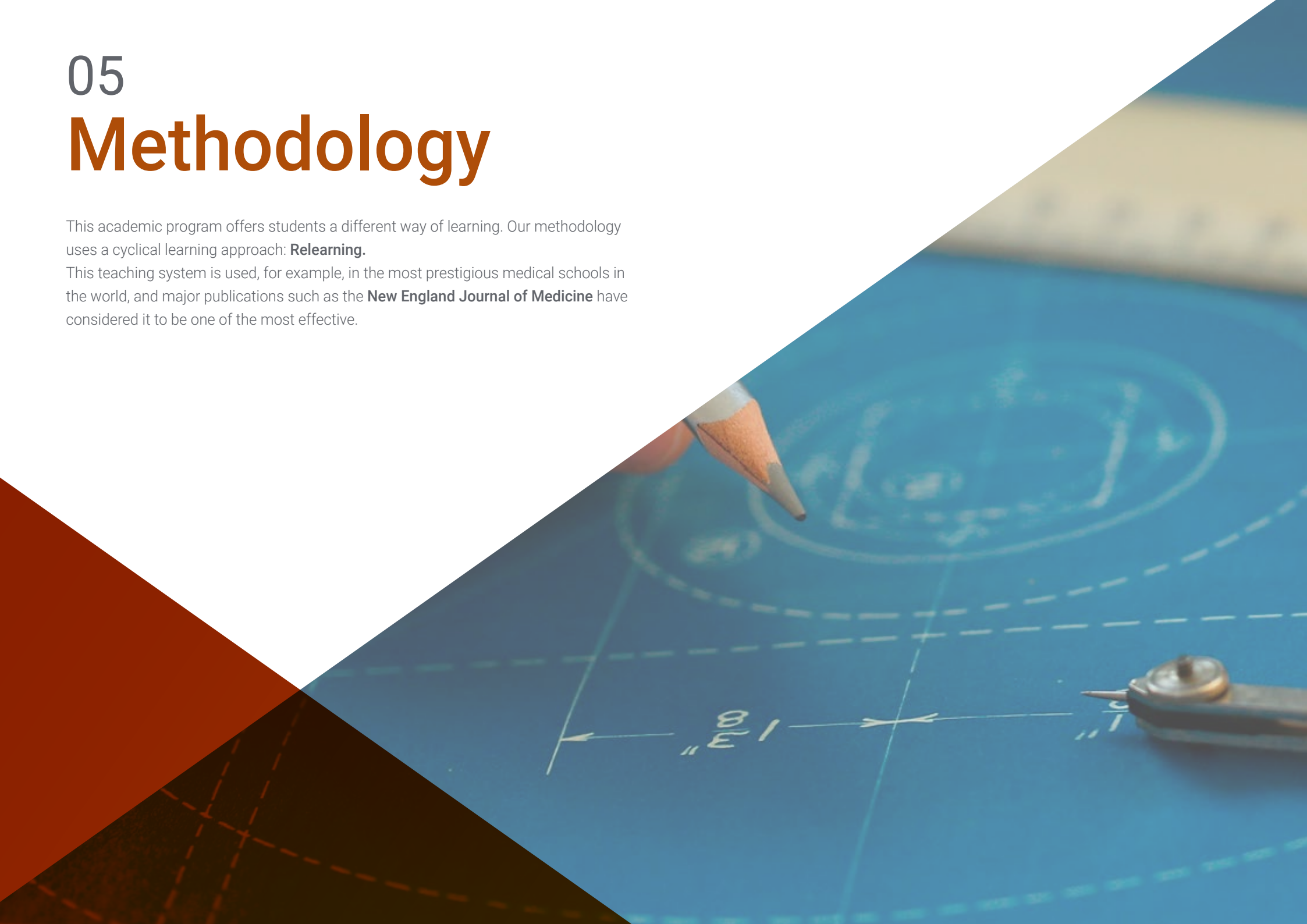
This specialization will allow you to comfortably advance in your career "

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

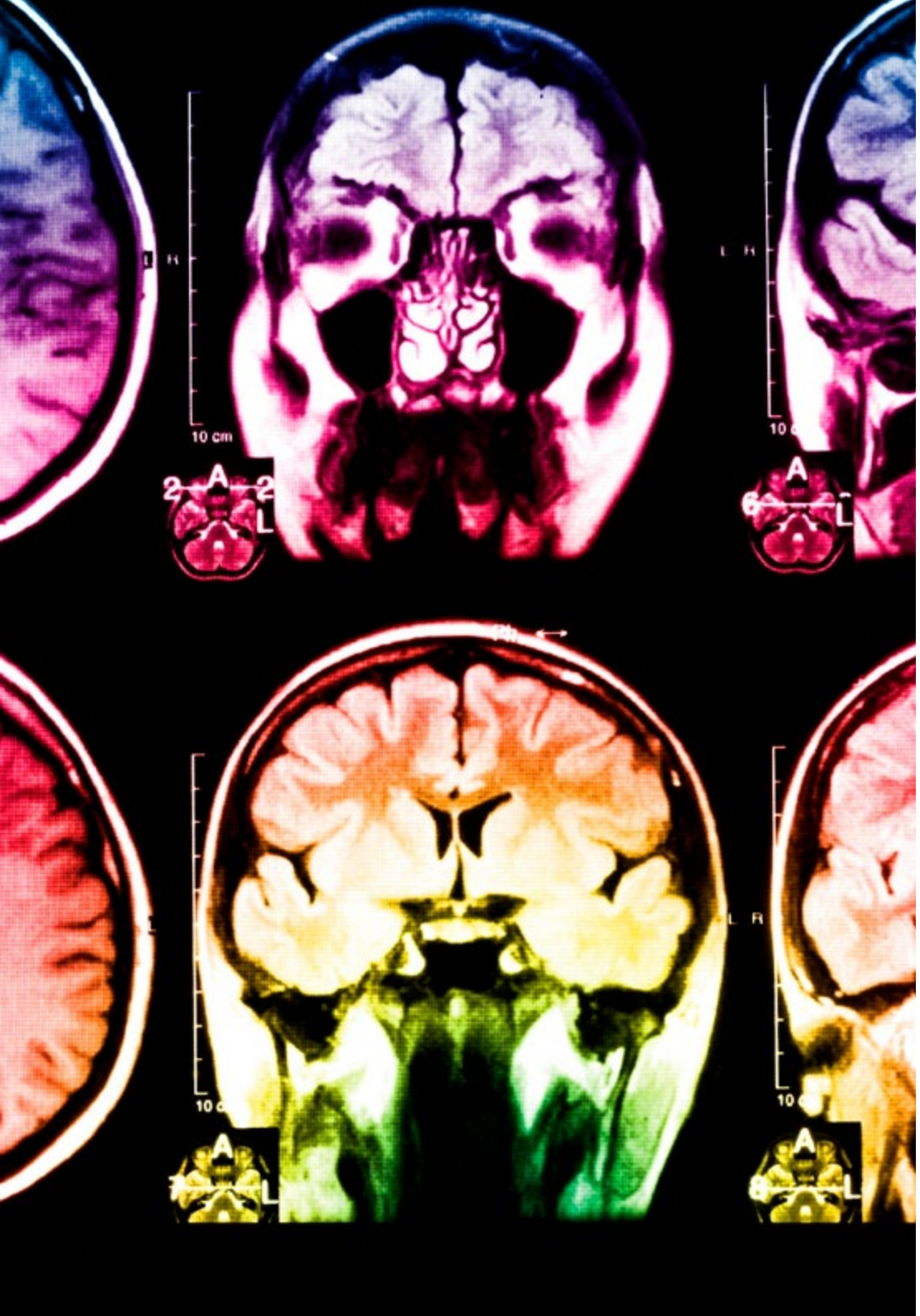
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

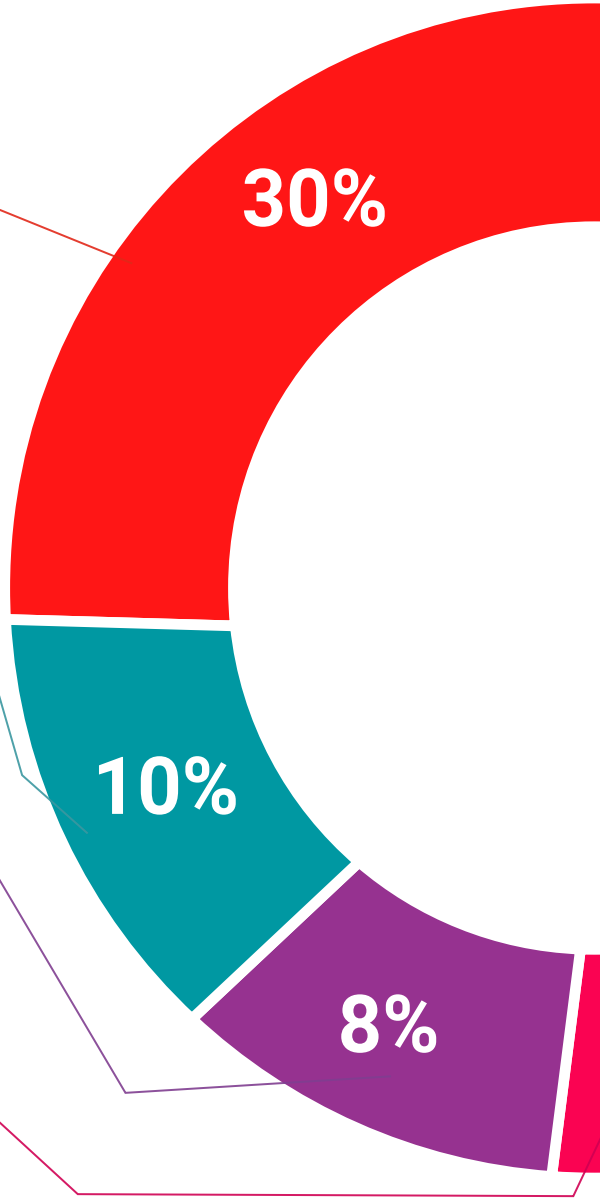
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

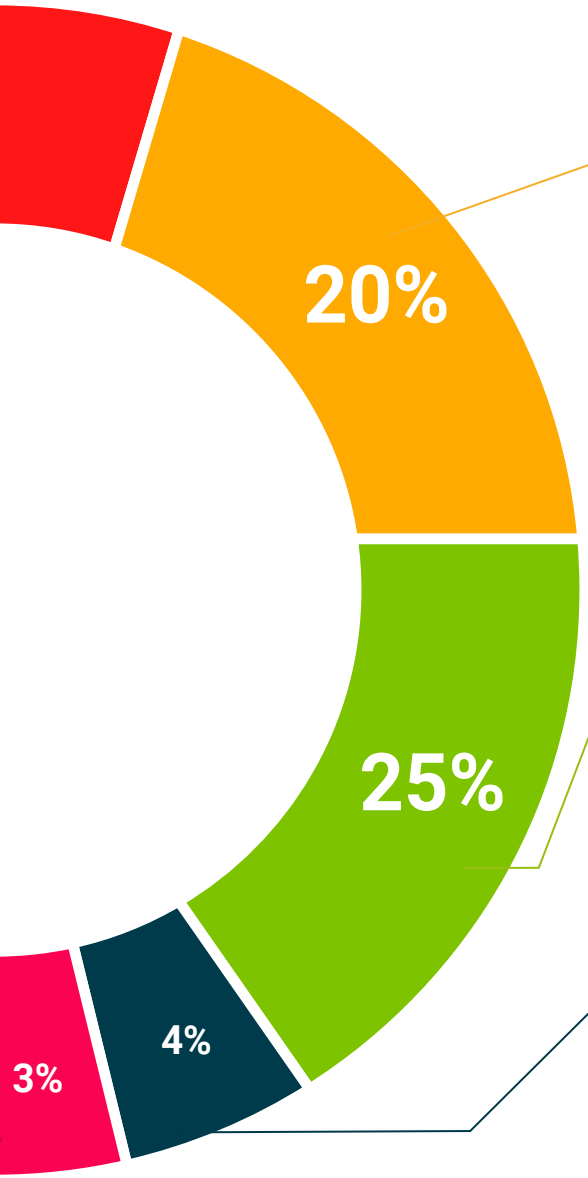
Practising Skills and Abilities

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 Diploma in Execution of Construction Works guarantees, in addition to the most rigorous and up-to-date training, access to a Postgraduate Diploma issued by TECH Technological University.

Successfully complete this training program and receive your university certificate without travel or laborious paperwork"

This**Postgraduate Certificate in the Execution of Construction Works** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the **Postgraduate Certificate**, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Execution of Construction Works**

Official Nº of Hours: **450 h.**


tech technological university

Awards the following

CERTIFICATE

to

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

For having passed and accredited the following program

POSTGRADUATE DIPLOMA

in

Execution of Construction Works

This is a qualification awarded by this University, equivalent to 450 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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