





### Postgraduate Diploma **Construction Works** Management

Course Modality: Online Duration: 6 months

Certificate: TECH Technological University

Official N° of Hours: 450 h.

Website: www.techtitute.com/engineering/postgraduate-diploma/postgraduate-diploma-construction-works-management

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### tech 06 | Introduction

Construction Works Management is one of the fundamental parts that the civil engineering professional has to carry out, since the phases prior to construction, such as contracting and planning, as well as the health and safety processes for workers, or the closing and liquidation of the work are aspects that must be clearly defined so that there are no errors in the programming and development of the work.

The training program will emphasize the existing tools for the search for tenders and the drafting of bids. In addition, international contracting through multilateral organizations and direct international contracting will be studied.

In the field of Construction Works Management, the figure of the PMP has emerged, which covers projects in all their breadth and has become indispensable in order to optimize resources within the life of a project. Thus, the necessary tools for budget, cost, purchasing, planning and certification control will be described; and knowledge of personnel management will be provided, with emphasis on human resources planning and management.

In addition, the civil engineer must have a firm commitment to safety and health on construction sites, both because of the ethical connotations of caring for employees and because of the liabilities that can arise from malpractice in the profession. For all these reasons, the Specialization will study the most important aspects to be taken into account for the development of the works and the tools that have emerged to improve the monitoring of health and safety in the works.

Finally, the student will also learn about the tools to be used to achieve an optimal closing of the work. The settlement and closure of works is a very important point since an inadequate closure may result in an overrun of costs at the time of closure and another deferred over time that may worsen the economic result of the work.

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 Construction Works Management** contains the most complete and up-to-date educational program on the market. The most important features of the program include:

- 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 Management 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.

It includes, in its teaching staff, professionals belonging to the field of civil engineering, who bring to this training the experience of their work, in addition to recognized specialists from prestigious reference societies and 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 Construction Works Management experts

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







### tech 10 | Objectives



### **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







#### **Specific Objectives**

#### Module 1.

- Analyze the types of contracts existing in the world of Civil Engineering
- Have knowledge of the solvency analysis of each business
- Acquire skills for the preparation of technical and economic offers
- Study the use of the most suitable software for the preparation of bids
- Study in depth the role of the Contract Manager
- Prepare the necessary processes for the administrative start-up of a construction site and the latest developments in this regard
- Know the documents in the field of Health and Safety, environmental measures and waste management necessary for the development of the work
- Have the necessary knowledge for the correct implementation of auxiliary site installations
- Know the internationalization of the business in which the student develops his/her functions

#### Module 2.

- Know the Figure of the PMP
- Training on project management from the time, organization, economic and human resources perspectives
- Have the necessary training to improve the professional's communication with customers and suppliers
- Acquire the skills for proper purchasing management
- Analytical capacity to optimize results in the development of each project
- Know the appropriate software tools for planning, monitoring and closing of construction sites

#### Module 3.

- Learn the Current Regulations in the Field of Health and Safety
- Have the necessary guidelines for the drafting and management of the necessary Health and Safety documents ESS and PSS
- Have an overview of those involved in the safety and health organization chart of the worksite
- Training on documentation to be generated in construction works
- Develop the latest tools available for documentation management
- Training on site operations to take the necessary actions to ensure the safety of workers and their health
- Develop the PACMA document
- Elaborate the test plan
- Perform waste management during the execution of the work

#### Module 4.

- Prepare the Necessary Documentation for the Preparation of the Liquidation and Closure of the Work
- Training in general construction site measurements
- Know the latest tools available for the realization of field measurements.
   field measurements
- Develop knowledge of the methods for closing open nonconformities during the course of the Construction Work
- Detect and create conflicting prices
- Training in negotiation for the discussion with the client for the economic closure of the work
- Follow up and open additional files in addition to the work itself, such as price revisions





### tech 14 | Course Management

#### 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 Management, having worked as a construction manager in projects such as 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 Management, having worked as a construction manager in projects such as 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. Gómez Martín, Carlos

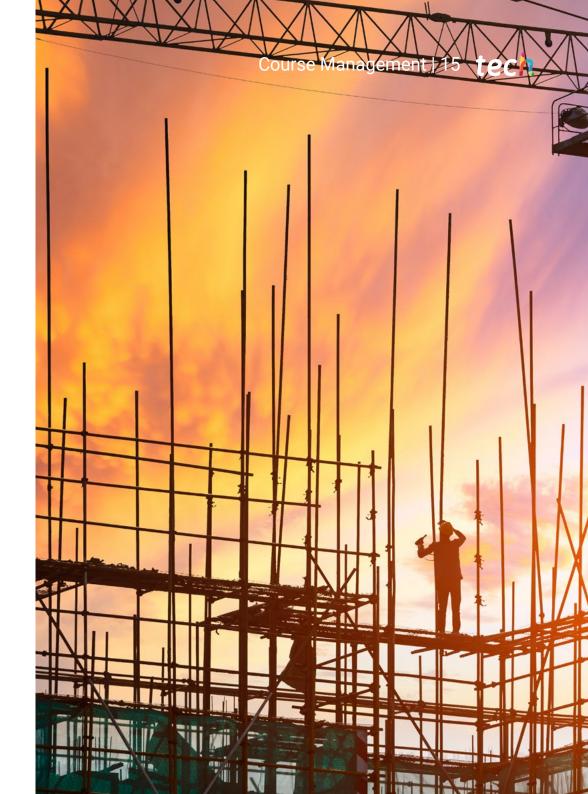
- Civil Engineer of Roads, Canals and Ports
- Professional Master's Degree in Civil Engineering BIM
- 13 years of experience in the field of construction execution, executing airport and industrial works.
- Develops specialized work with the BIM environment.

#### Mr. Torres Torres, Julián

- Civil Engineer, University of Granada.
- Professional Master's Degree in Structures
- 14 years of experience in the field of construction execution, having worked as construction manager in road, urbanization and WWTP works.
- In the engineering field, he has developed his work as an independent freelance and as technical director at CANDOIS INGENIEROS CONSULTORES SL.



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







### tech 18 | Structure and Content

#### Module 1. Contracting and Preliminary Phases of Work

- 1.1. Choice of Type of Contracts to Be Offered and Location of Contracts
  - 1.1.1. Identification of Contracting Objectives
  - 1.1.2. Contracting Platforms
  - 1.1.3. Customer Knowledge and Analysis
  - 1.1.4. Financial Solvency Analysis
  - 1.1.5. Technical Solvency Analysis
  - 1.1.6. Choice of Contracts to Be Offered
- 1.2. Analysis of Required Solvency
  - 1.2.1. Financial Solvency Analysis
  - 1.2.2. Technical Solvency Analysis
  - 1.2.3. Analysis the Need for Joint Venture Partners
  - 1.2.4. UTE Training Negotiation
- 1.3. Preparation of the Financial Offer
  - 1.3.1. Project Budget Breakdown
  - 1.3.2. Request for Quotations for Study
  - 1.3.3. Hypothesis Statement
  - 1.3.4. Closing Economic Offer / Risk
- 1.4. Technical Drafting of Bids
  - 1.4.1. Study Bidding Terms and Conditions and Basic Bidding Project
  - 1.4.2. Technical Report Writing
  - 1.4.3. Drafting of Work Program
  - 1.4.4. SYS and PACMA Documents
  - 1.4.5. Improvement
- 1.5. Contract Analysis (Contract Manager)
  - 1.5.1. Figure of the Contract Manager
  - 1.5.2. Opportunities for the Figure of the Contract Manager
  - 1.5.3. Training of the Contract Manager
- 1.6. Drafting of PSS and Opening of Work Center
  - 1.6.1. PSS Newsroom
  - 1.6.2. PSS Approval and Opening of the Work Center
  - 1.6.3. The Incident Book

- 1.7. Drafting of the PACMA and Waste Management Plan
  - 1.7.1. Analysis of Environmental Documentation of the Project
  - 1.7.2. Analysis of the Environmental Characteristics of the Area of Action
  - 1.7.3. Knowledge of Current Environmental Legislation
  - 1.7.4. Adjustment of the PACMA of the Business to the Project.
  - 1.7.5. Elaboration of the Plan for the Management of SDWRs
- 1.8. Site Installations, Logistics, Site Layout
  - 1.8.1. Needs Analysis for Stockpiling Areas and Facilities
  - 1.8.2. Study of Materials and Facilities Required for the Implementation Area
  - 1.8.3. Implementation.
  - 1.8.4. Topographic Survey of the Site
  - 1.8.5. Drones and Surveying
  - 1.8.6. In-Cabinet Verification of Topographic Data
  - 1.8.7. Signing of the Staking Out Report
- 1.9. Multilateral International Tenders
  - 1.9.1. Multilateral Organizations
  - 1.9.2. Advantages of Multilateral Bidding
  - 1.9.3. Search for Opportunities in the Multilateral Market
  - 1.9.4. Implementation for Multilateral Bidding
    - 1.9.4.1. Countries of Interest
    - 1.9.4.2. Regulatory Framework.
    - 1.9.4.3. Local Partner
    - 1.9.4.4. Technical and Economic Solvency with a View to Internationalization
    - 1.9.4.5. Development of International Contracts
    - 1.9.4.6. Risks of Business Internationalization
- 1.10. Internationalization of the Business
  - 1.10.1. Countries of Interest
  - 1.10.2. Regulatory Framework.
  - 1.10.3. Local Partner
  - 1.10.4. Technical and Economic Solvency with a View to Internationalization
  - 1.10.5. Development of International Contracts
  - 1.10.6. Risks of Business Internationalization

#### Module 2. Construction Planning (PMP)

- 2.1. Introduction and Life Cycle
  - 2.1.1. Project Definition and Project Management
  - 2.1.2. Areas of Expertise
  - 2.1.3. Life Cycle
  - 2.1.4. Interested Parties
  - 2.1.5. Management Influence
- 2.2. Management Processes
  - 2.2.1. Operation and Maintenance Project Management Processes
  - 2.2.2. Management Process Groups
  - 2.2.3. Interactions between Processes
- 2.3. Integration Management
  - 2.3.1. Development of the Articles of Incorporation
  - 2.3.2. Development of the Scope Statement
  - 2.3.3. Development of the Management Plan
  - 2.3.4. Project Management
  - 2.3.5. Work Supervision and Control
  - 2.3.6. Integrated Change Control
  - 2.3.7. Project Closing
- 2.4. Scope Management
  - 2.4.1. Scope Planning
  - 2.4.2. Scope Definition
  - 2.4.3. Creation of WBS
  - 2.4.4. Scope Verification
  - 2.4.5. Scope Closure
- 2.5. Time Management
  - 2.5.1. Definition of Activities
  - 2.5.2. Establishment of a Sequence of Activities
  - 2.5.3. Estimated Resources
  - 2.5.4. Estimated Duration
  - 2.5.5. Schedule Development
- 2.6 Cost Management

- 2.6.1. Cost Estimates
- 2.6.2. Preparation of a Cost Estimate
- 2.6.3. Control of Costs and Variances
- 2.7. Human Resources Management
  - 2.7.1. Schedule Control
  - 2.7.2. Human Resources Planning
  - 2.7.3. Team Training
  - 2.7.4. Team Development
  - 2.7.5. Human Resources Management
  - 2.7.6. Human Resources Organizational Models
  - 2.7.7. Theories on the Organization of Human Resources
- 2.8. Communications in Management
  - 2.8.1. Communications Planning
  - 2.8.2 Distribution of Information
  - 2.8.3. Performance Reporting
  - 2.8.4. Stakeholder Management
- 2.9. Risk Management.
  - 2.9.1. Risk Management Planning
  - 2.9.2. Risk Identification
  - 2.9.3. Qualitative Risk Analysis
  - 2.9.4. Quantitative Risk Analysis
  - 2.9.5. Risk Response Planning
  - 2.9.6. Risk Monitoring and Control
- 2.10. Procurement Management
  - 2.10.1. Purchasing and Procurement Planning
  - 2.10.2. Recruitment Planning
  - 2.10.3. Solicit Responses from Vendors
  - 2.10.4. Contract Administration
  - 2.10.5. Contract Closure

### tech 20 | Structure and Content

#### Module 3. Health and Safety and PACMA

- 3.1. SYS Application Standard
  - 3.1.1. National Regulations
  - 3.1.2. International Regulations
  - 3.1.3. Implications and Responsibilities of those Involved in the SYS of the Site
- 3.2. Health and Safety Study and PSS
  - 3.2.1. Health and Safety Study
  - 3.2.2. Health and Safety Plan
  - 3.2.3. Drafting Phases of both Documents
  - 3.2.4. Involvement and Responsibilities of the Authors of the ESS and PSS
- 3.3. Figures within the Site Organizational Chart
  - 3.3.1. SYS Coordinator
  - 3.3.2. Preventive Resources of the Business
  - 3.3.3. Prevention Service
  - 3.3.4. Workers
- 3.4. Required Documentation
  - 3.4.1. Documentation Prior to Commencement of Work
  - 3.4.2. Documentation Related to Workers
  - 3.4.3. Machinery Documentation
  - 3.4.4. Documentation Related to Company
- 3.5. Installations, Individual and Collective Protections
  - 3.5.1. On-site Installations
  - 3.5.2. Individual Protection
  - 3.5.3. Collective Protection
- 3.6. PACMA
  - 3.6.1. Definition of PACMA
  - 3.6.2. PACMA Editorial Staff
  - 3.6.3. PACMA On-Site Monitoring
  - 3.6.4. External and Internal Audits
  - 3.6.5. PACMA's Added Value on Site

- 3.7. On-Site Testing Control
  - 3.7.1. Test Plan
  - 3.7.2. Planning of a Test Plan
  - 3.7.3. Figures in Charge of Monitoring the Test Plan
  - 3.7.4. Importance of the Test Plan within the Site
- 3.8. Documentation Generated On-Site Related to PACMA
  - 3.8.1. Documentation Related PACMA
  - 3.8.2. Environmental Documentation
  - 3.8.3. New Tools for PACMA Control
  - 3.8.4. Participants in the Follow-up of Documents Generated in Relation to PACMA
- 3.9. Environmental Monitoring of the Work
  - 3.9.1. National and International Environmental Legislation
  - 3.9.2. Guidelines Set Out for the Environmental Monitoring of the Construction Site
  - 3.9.3. Use of Recycled Materials and Recovery of Materials
  - 3.9.4. On-site Carbon Footprint Reduction
- 3.10. Waste Management
  - 3.10.1. Waste Management Plan
  - 3.10.2. Waste Management Legislation
  - 3.10.3. Hazardous Waste Management
  - 3.10.4. RCDS Valorization

#### Module 4. Settlement and Closure of Work

- 4.1. Pre-Completion Work
  - 4.1.1. Monthly Follow-up of Work Measurements
  - 4.1.2. Monthly Follow-up of Nonconformities
  - 4.1.3. Monthly Follow-up of New Construction Work Items
  - 4.1.4. Administrative Management in the Event of Modifications
- 4.2. Final Measurement of the Work
  - 4.2.1. Participants in the Final Measurement of the Work
  - 4.2.2. Planning for the Final Measurement of the Work
  - 4.2.3. Coordination of Site Measurements

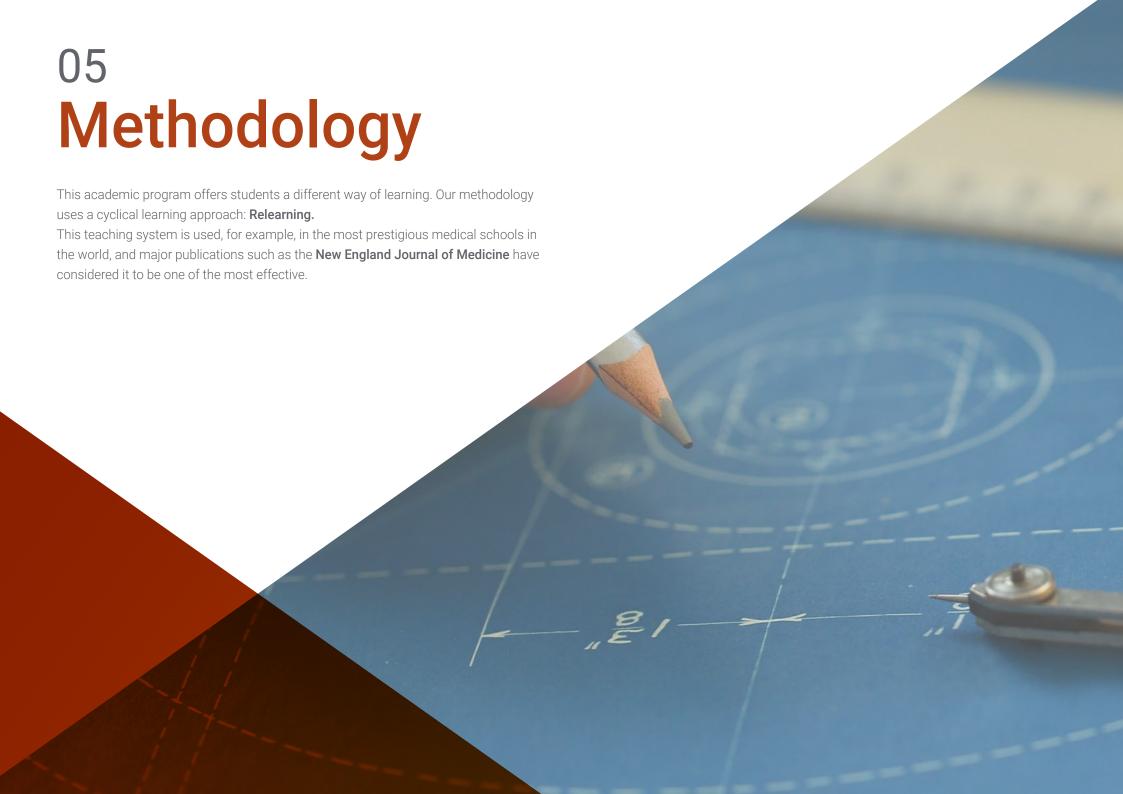
### Structure and Content | 21 tech

- 4.2.4. Discussion with the Client of the Final Measurement of the Work.
- 4.3. Review of Final Construction Plans
  - 4.3.1. Control of Current Plans
  - 4.3.2. Final Drawing of Plans
  - 4.3.3. Presentation of As Built Plans
- 4.4. Review of Nonconformities
  - 4.4.1. Follow-up and Closure of Nonconformities throughout the Development of the Work
  - 4.4.2. Importance of Nonconformities
  - 4.4.3. Final Review of Nonconformities Generated During the Construction Work
- 4.5. Negotiation of Contradictory Prices
  - 4.5.1. Definition of Contradictory Pricing
  - 4.5.2. Negotiation of Contradictory Price
  - 4.5.3. Contradictory Price Closing
- 4.6. Negotiation of Economic and Legal Closing of the Work
  - 4.6.1. Summary of Data for Site Closure
  - 4.6.2. Economic Negotiation for the Closing of the Work
  - 4.6.3. Legal and Administrative Closing of Work
  - 4.6.4. Current Records in Process
- 4.7. Adequacy of Affected Areas of the Construction Site
  - 4.7.1. Definition of Areas Affected During the Development of Works
  - 4.7.2. Measures Taken Throughout the Execution of the Works
  - 4.7.3. Measures in Affected Areas for the Closure of the Construction Site
  - 4.7.4. Final Restoration of the Work
- 4.8. Minutes of Receipt
  - 4.8.1. Works Acceptance Ceremony
  - 4.8.2. Figure of the Controller
  - 4.8.3. Works Acceptance Report
- 4.9. Removal and Cleaning of Facilities Areas
  - 4.9.1. Withdrawal of Installations Area
  - 4.9.2. Cleaning of Areas Affected by the Works

- 4.9.3. Removal of Site Equipment
- 4.10. Subsequent Files (Price Revisions and Possible Claims)
  - 4.10.1. Types of Files after the Works Have Been Received
  - 4.10.2. Price Revisions
  - 4.10.3. Claim Files
  - 4.10.4. Final Closure of the Work File



A comprehensive and multidisciplinary program that will allow you to excel in your career, following the latest advances in the field of Civil Engineering"





### tech 24 | Methodology

#### 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.

### tech 26 | Methodology

### **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.



### Methodology | 27 tech

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.





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.



25%

4%

20%





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This **Postgraduate Diploma in Construction Works Managements** 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 Diploma** issued by **TECH Technological University** via tracked delivery\*.

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

Title: Postgraduate Diploma in Construction Works Management
Official N° of Hours: 450 h.



#### POSTGRADUATE DIPLOMA

in

#### Construction Works Management

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.

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Tere Guevara Navarro

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technological university

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