

Postgraduate Diploma Port Layout





Postgraduate Diploma Port Layout

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

Website: www.techtute.com/in/engineering/postgraduate-diploma/postgraduate-diploma-port-layout

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01

Introduction

This program is an educational product of the highest quality, created to offer professionals in this field the most up-to-date knowledge regarding the maritime layout of a port, based on the ROM Maritime Works Recommendations. With a teaching staff of professionals with more than 50 years of experience in the different specialties of maritime works, it is a first-class opportunity to bring professionals up to date in this field of work.





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A complete specialization that compiles the latest advances and ways of working in port layout, with the best teaching quality on the online market"

This Postgraduate Diploma is configured on the basis of modules of high educational impact that will take you through the most advanced knowledge in port layout.

The Maritime Climate and Wave Study module begins with the study of wave and swell theory, including the characterization of waves and their breaking forms. It also includes the determination of the rest of the maritime climate parameters, the methodology for data collection, the maritime climate ROM program and, finally, the study of the physical wave models and the compilation of the most important software available in maritime engineering.

The Maritime Port Layout and Berthing Works module is the first port infrastructure design module of the Postgraduate Diploma. Firstly, it focuses on the maritime layout of the Port including both plan and elevation dimensioning. Sizing is based on the ROM Maritime Works Recommendations.

Due to the globalization of the economy, logistics, which has become the competitive engine for trade and industry, is reducing the time and cost of transportation and evolving in ways that increasingly reduce negative environmental and social impacts.

During the execution of port infrastructure works, knowledge of the different specific work units, construction materials and the appropriate choice of machinery plays a fundamental role.

This is why it is essential to plan the construction properly and always taking into account the different recommendations issued by official bodies such as State Ports and the experience of experts in the field, the module also develops the content of the Guide of Good Practices in the Execution of Maritime Works issued by that institution.

This **Postgraduate Diploma in Port Layout** contains the most complete and up-to-date educational program on the market. Its most notable features are:

- ◆ The development of practical cases presented by experts in Port Layout
- ◆ 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 self-assessment can be used to improve learning
- ◆ Its special emphasis on innovative methodologies in Port Layout
- ◆ 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



A complete in-depth study of the most current criteria in the different aspects of port layout”

“

A quality program that will allow you not only to follow the specialization, but also to have complementary support and information banks available"

Its teaching staff includes professionals from the field of civil engineering, who bring to this specialization 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 learning programmed to learn 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 Postgraduate Diploma. For this purpose, the professional will be assisted by an innovative interactive video system developed by renowned and experienced experts in Port Layout.

This program has the best teaching material available online or downloadable, to make it easier for you to manage your study and effort.

A very complete specialization, created with the objective focused on bringing our students to the highest level of competence.



02 Objectives

The objectives of this Postgraduate Diploma have been established based on realistic and necessary goals for professionals in the sector. Gradually, you will be able to check your learning and your progress in the mastery of the contents so that, at the end, you will have achieved a complete process of professional growth.





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*Realistic, achievable and high-impact goals
for your professional development”*



General Objective

- ◆ Create future professionals capable of addressing actions and solutions in the field of port infrastructures, from a multidisciplinary perspective and based on the investigation of the design of maritime works and the elements that influence it

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A stimulating professional growth journey designed to keep you interested and motivated throughout the program”





Specific Objectives

Module 1. Maritime Climate and Wave Study

- ◆ Delve into the theory of waves, and the characterization of them and their breakage forms
- ◆ Delve into the determination of maritime climate parameters that influence the design of port infrastructures
- ◆ Become familiar with the Maritime Works Recommendations for maritime weather and with physical wave models
- ◆ Delve into the compilation of the most widely used software available in the maritime engineering profession

Module 2. Maritime Port Layout and Berthing Works

- ◆ Delve into the maritime layout of a port based a ROM maritime works recommendations
- ◆ Analyze the most convenient structural typology of the dock
- ◆ Delve into the design of docks
- ◆ Delve into the typologies of berthing works, the advantages and disadvantages of each type and the construction procedures of such works
- ◆ Delve into the structural design of berthing works

Module 3. Design of Shelter Works

- ◆ Delve into the most important concepts for the design and construction of dams, their classification and selection of the most appropriate structural typology
- ◆ Delve into the knowledge of the physical marine environment and the different types of external maritime works, the advantages and disadvantages of each type and the construction procedures of maritime works
- ◆ In-depth knowledge of the structural design of a dike and is familiar with various constructed dike designs

Module 4. Port Management, Operation and Maintenance

- ◆ Understand the role of logistics and the importance of the ports
- ◆ Delve into the different agents comprising the port community
- ◆ Delve into the role of port authorities and become familiar with their functions and classifications
- ◆ Have a global vision of port management, operation and maintenance of port infrastructures
- ◆ Delve into the different elements for the instrumentation and monitoring of maritime works
- ◆ Analyze the required inspections in time and form of the different elements of the port works
- ◆ In-depth knowledge of the ability to undertake a conservation or repair project for any port infrastructure

Module 5. Construction of Port Infrastructures

- ◆ Delve into the different units of specific maritime construction work
- ◆ In-depth knowledge of the different construction materials and their applicability to port infrastructures
- ◆ Analyze the most appropriate machinery for the development of port infrastructure works
- ◆ Use the necessary tools to plan marine construction projects

03

Course Management

Within the quality criteria that we apply in all our training, this Postgraduate Diploma offers you the opportunity to learn from the best, with a teaching faculty made up of professionals in the sector who will invest their theoretical and practical knowledge to take you to the highest level of proficiency. With the latest and most effective teaching methods on the online teaching market.





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Learn with the best and acquire the knowledge and skills you need to intervene in this area of development with total success"

Management



Mr. Angulo Vedriel, Rafael

- ◆ Positions: Civil Engineer
- ◆ Master's Degree studies in Civil Engineering
- ◆ Ph.D. in Civil Engineering
- ◆ Project manager and Design Manager both in Spain and on secondment in Latam, Middle East and Southeast Asia
- ◆ PMP © certification for project management

Professors

Mr. Moltó Martín, Rodrigo

- ◆ Positions: Civil Engineer
- ◆ Specialized in Foundations and Structures
- ◆ Projects for piloted piers and jetties, offshore gravity-base foundations (GBS), reinforced concrete floating caissons and port superstructure

Mr. Tordesillas García, Víctor Manuel

- ◆ Positions: Civil Engineer, Polytechnical University of Madrid
- ◆ Mentions in Civil Construction and Hydrology
- ◆ Experience has focused on project management and infrastructure design in maritime engineering

Mr. Cortés Millares, Javier

- ◆ Positions: Engineer in Theory and Practical Application of the Finite Element Method and Simulation
- ◆ University Expert in Design and Management of Water Supply, Urban Drainage and Wastewater Treatment Systems by the University of Zaragoza
- ◆ University Professor at the Faculty of Civil Engineering
- ◆ Degree in Civil Engineering from the Polytechnic University of Valencia
- ◆ BASF Award: "Expansion Works Line 5 VLC subway" ETSICCP (UPV)



04

Structure and Content

The syllabus of the Postgraduate Diploma is configured as a complete tour through each and every one of the knowledge necessary to understand and assume the ways of working in this field. With an approach focused on practical application that will allow you to grow as a professional from the first moment of the program.





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A comprehensive syllabus focused on acquiring knowledge and converting it into real skills, created to propel you to excellence”

Module 1. Maritime Climate and Wave Study

- 1.1. Wave Theory
 - 1.1.1. Wave Mechanics
 - 1.1.2. Classification of Waves at Sea
 - 1.1.3. General Characteristics of a Wave
- 1.2. Waves
 - 1.2.1. Wave Characterization
 - 1.2.2. Forms of Wave Breakage
- 1.3. Effects Produced by Waves
 - 1.3.1. Diffraction
 - 1.3.2. Refraction
 - 1.3.3. Breakage
 - 1.3.4. Shoaling
 - 1.3.5. Others
- 1.4. Sea Level and Tides
- 1.5. Characterization of the Marine Environment
- 1.6. Data Collection Methodologies
- 1.7. Program Rom Maritime Climate
- 1.8. Physical Wave Models
- 1.9. Marine Engineering Software

Module 2. Maritime Port Layout and Berthing Works

- 2.1. Maritime Port Layout: Elevation Requirements
 - 2.1.1. Project Criteria
 - 2.1.2. Ship
 - 2.1.3. Water Level
 - 2.1.4. Bottom
- 2.2. Maritime Port Layout: Elevation Requirements
 - 2.2.1. Navigation Areas
 - 2.2.2. Harbour Mouth
 - 2.2.3. Maneuver
 - 2.2.4. Docks and Maneuvers
 - 2.2.5. Operation
- 2.3. In-plant Port Dimensioning
 - 2.3.1. General Considerations for Location, Orientation and Alignments
 - 2.3.2. Determination of the Number of Berths
 - 2.3.3. Length of Berthing Line
 - 2.3.4. Dimensioning of Heels and Ramps
 - 2.3.5. Determination of Width
- 2.4. Port Dimensioning in Elevation
 - 2.4.1. Dock Superstructure Crest Elevation
 - 2.4.2. Mooring Berthing Ditch
 - 2.4.3. Longitudinal Profile of Heels and Ramps
 - 2.4.4. Operating Area Slopes
- 2.5. General and Classification of Berthing Works
 - 2.5.1. General Aspects on Berthing Works
 - 2.5.2. General and Functional Classification
- 2.6. Mooring and Berthing Works: Structural Typology
 - 2.6.1. Classification According to Structural Typology
- 2.7. Main Elements of the Berthing Works

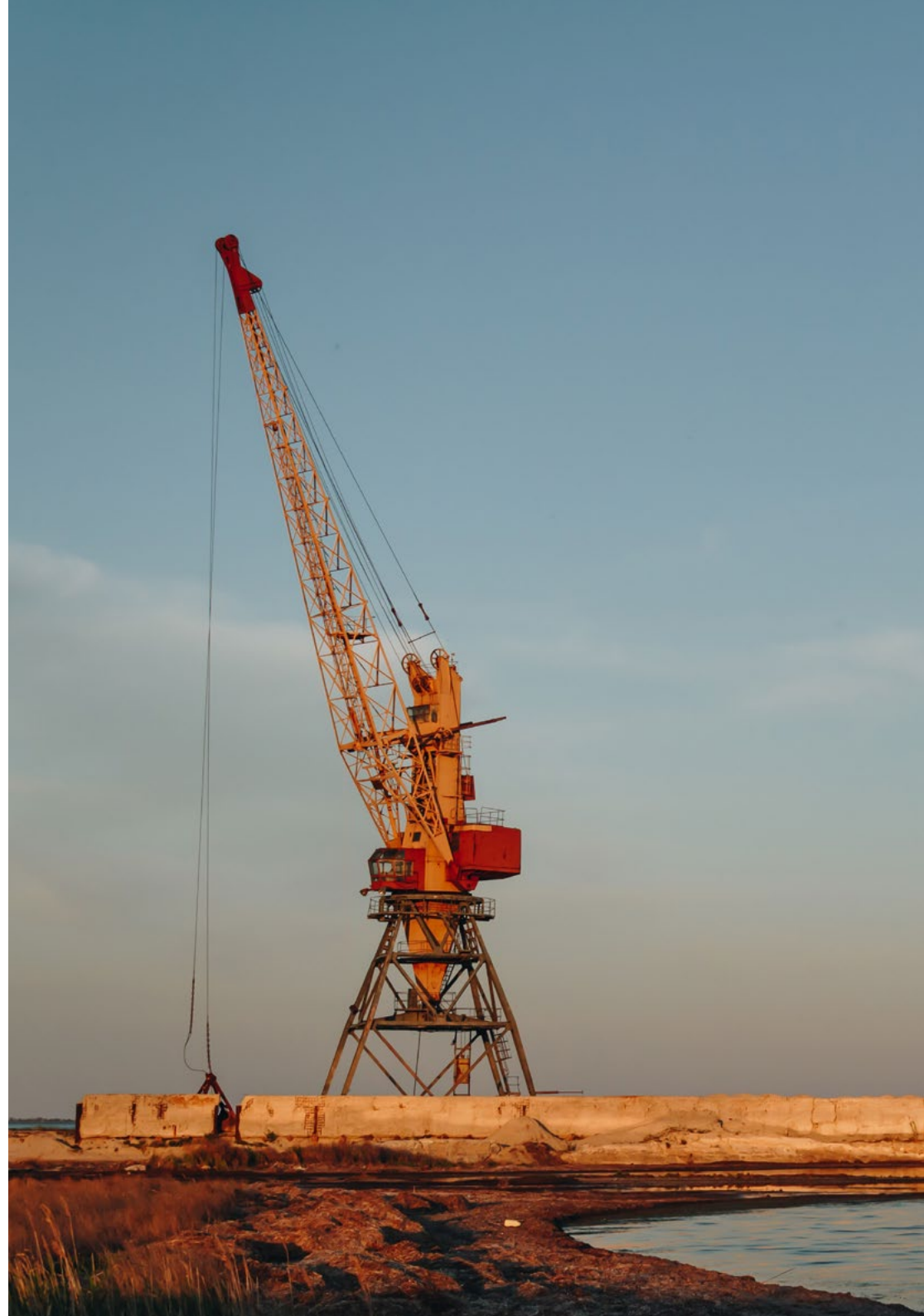
- 2.8. Classification of Berthing and Mooring Works according to the Structural Typology of their Parts
- 2.9. Berthing Works: Parameters for the Choice of Structural Typology
 - 2.9.1. Berthing Works: Geotechnical and Seismic Parameters
 - 2.9.2. Berthing Works: Morphological, Climatic and Environmental Parameters
 - 2.9.3. Berthing Works: Construction and Material Parameters, Use and Operation, and Maintenance and Conservation
- 2.10. Examples of Berthing Works and Characteristics

Module 3. Design of Shelter Works

- 3.1. Slope Dikes: General and Environmental Actions for Design
 - 3.1.1. General aspects
 - 3.1.2. Marine Climate
 - 3.1.3. Sea Level
 - 3.1.4. Wave Surges in Slope Dikes
- 3.2. Design of Slope Dikes
 - 3.2.1. Sections Type
 - 3.2.2. Analysis of Alternatives
- 3.3. Dimensioning of Slope Dikes
 - 3.3.1. Materials
 - 3.3.2. Failure Mechanism
 - 3.3.3. Main Elements of the Slope Dike
 - 3.3.4. Superstructure
- 3.4. Considerations for Slope Dike Construction
- 3.5. Slope Dike Scale Models and Examples
 - 3.5.1. Considerations for Slope Dike Construction
 - 3.5.2. Examples of Slope Dikes
- 3.6. Vertical Dikes: General Aspects and Main Elements
 - 3.6.1. General Aspects
 - 3.6.2. Foundations for Vertical Dikes
 - 3.6.3. Substructure of Vertical Dikes
 - 3.6.4. Superstructure of Vertical Dikes
- 3.7. Classification of Vertical Dikes
 - 3.7.1. Classification According to Type of Foundations
 - 3.7.2. Classification According to Type of Caisson
 - 3.7.3. Classification According to Energy Dissipation
 - 3.7.4. Classification According to the Type of Ramparts
 - 3.7.5. Mixed Type Vertical Dikes
 - 3.7.6. Vertical Dikes of Cylindrical Geometry
- 3.8. Structural Stability and Wave-Structure Interaction in Vertical Dikes
 - 3.8.1. Wave Actions
 - 3.8.2. Reflection
 - 3.8.3. Transmission
 - 3.8.4. Rebase
 - 3.8.5. Stability and Bearing Capacity of Foundations
- 3.9. Considerations for Slope Dike Construction
- 3.10. Examples of Vertical Dikes
 - 3.10.1. Examples of Vertical Dikes

Module 4. Port Management, Operation and Maintenance

- 4.1. General Aspects and Organization of the Ports
 - 4.1.1. Logistics
 - 4.1.2. Sea Port
 - 4.1.3. Unctad Classification
 - 4.1.4. Functions
 - 4.1.5. Port Community
- 4.2. Port Authority
- 4.3. Port Terminals
- 4.4. Port Services
 - 4.4.1. Commercial Port Customers
 - 4.4.2. Agents Providing Services
 - 4.4.3. Port Services
 - 4.4.4. Classification of Port Services
 - 4.4.5. Port Services Management
- 4.5. Port Fees
- 4.6. Port Operation
 - 4.6.1. Port Operation: General Aspects
 - 4.6.2. Port Operation: Types
- 4.7. Instrumentation, Monitoring and Inspection for Port Infrastructure Maintenance
 - 4.7.1. Instruments
 - 4.7.2. Monitoring
 - 4.7.3. Inspection
- 4.8. Breakdowns and Auscultation of Port Infrastructures
- 4.9. Reparation and Conservation of Port Infrastructures





Module 5. Construction of Port Infrastructures

- 5.1. Execution of Dredging
- 5.2. Fills and Riprap Dikes
 - 5.2.1. Filling
 - 5.2.2. Riprap Dikes
- 5.3. Construction of Dikes and Caisson Docks
 - 5.3.1. Floating Caisson
 - 5.3.2. Concrete Caisson
 - 5.3.3. Caisson Dikes
 - 5.3.4. Caisson Docks
- 5.4. Execution of Piloted Maritime Works
- 5.5. Execution of Screens and Piloted Offshore Works
 - 5.5.1. Concrete Screens
 - 5.5.2. Sheet Piles
 - 5.5.3. Piles
- 5.6. Subsea Outfalls and Underwater Works
 - 5.6.1. Pipelines
 - 5.6.2. Submarine Outfalls
 - 5.6.3. Underwater Works
- 5.7. Materials for the Execution of Maritime Works
- 5.8. Machinery for the Execution of Maritime Works
- 5.9. Maritime Works Planning

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.



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Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

Case Study to contextualize all content

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

“

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



You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.



A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

“*Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

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

The case method is the most widely used learning system in the best faculties in the world. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

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

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH, you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



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

This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

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



Practising Skills and Abilities

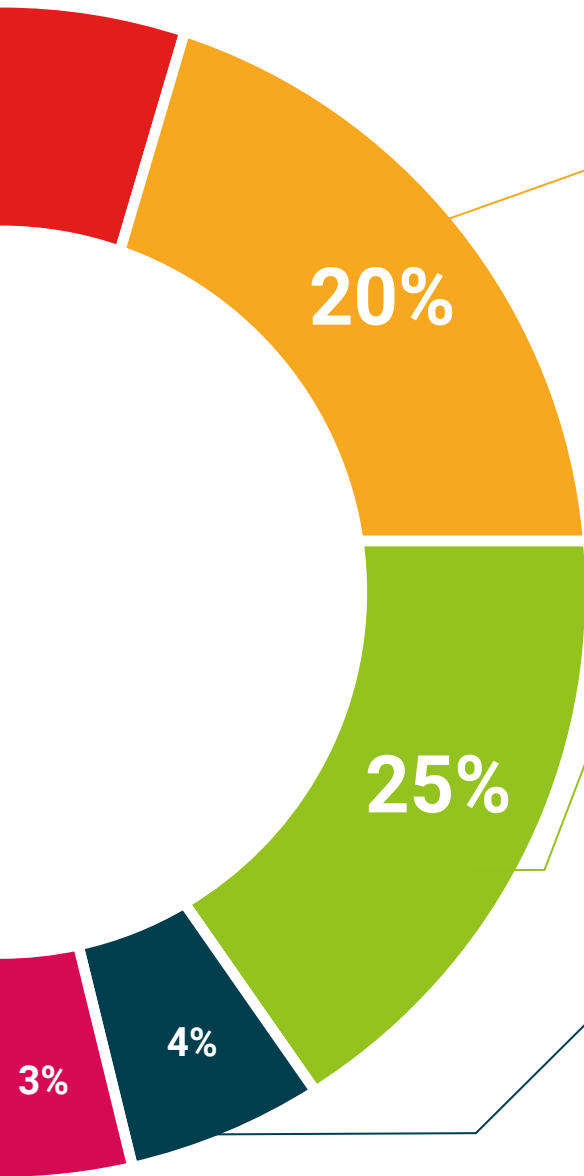
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.



Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



06

Certificate

The Postgraduate Diploma in Port Layout guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.



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

This **Postgraduate Diploma in Port Layout** 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 Port Layout**

Official N° of hours: **600 h.**



*Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

future
health confidence people
education information tutors
guarantee accreditation teaching
institutions technology learning
community commitment
personalized service innovation
knowledge present
development language
virtual classroom



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Postgraduate Diploma

Port Layout

