Postgraduate Certificate

Research, Development and Innovation in Naval Engineering

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Postgraduate Certificate
Research, Development and Innovation in Naval Engineering

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

Website: **www.techtitute.com/in/engineering/postgraduate-certificate/research-development-innovation-naval-engineering**

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01

Introduction

In Naval Engineering, R&D&I processes assume crucially important role, as this constantly evolving field greatly benefits from technological advances that improve ship performance and increase sustainability. It is imperative in this context to have specialized professionals who are able to adapt to the improvements in the field. This is a 100% online program, with downloadable material and without predetermined schedules.

At TECH we want to offer you the best specialization in Research, Development and Innovation in Naval Engineering so you can specialize in the field and increase your employability"

The Postgraduate Certificate in Naval Research, Development and Innovation in Naval Engineering is a program of the highest academic level that aims to specialize professionals in the field, enabling them to carry out their work with the highest quality and safety requirements. It is a comprehensive update program, imparted by professionals with years of experience, and which includes the latest advances on the subject.

The program focuses on current innovation and development trends that are emerging in each area of the life cycle of a naval project. Thus, the program will start with the study of innovation in materials engineering and the use of new design methodologies to ensure reliable designs.

It will also delve into digital twin technology, taking a comprehensive approach to the entire project life cycle, and will cover the design and trends of autonomous ships. The central themes of the program will delve into energy innovation from the perspective of alternative fuels, energy efficiency and renewable energies.

The different methods of generating clean energy in marine environments or current projects and trends in offshore wind turbines (fixed and floating), as well as tidal energy electricity generation are some additional strengths of this specialization. You will also the chance to learn about the latest trends in communication systems and the application of Blockchain technology in fleet management.

It should be noted that since this is a 100% online program, students are not constrained by fixed schedules or commutes, but rather, can access the contents at any time of the day, thus balancing their work or personal life with their academic life.

This **Postgraduate Certificate in Research, Development and Innovation in Naval Engineering** contains the most complete and up-to-date program on the market. The most important features include:

- Case studies presented by experts in Naval 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 the self-assessment process can be carried out to improve learning
- Special emphasis on innovative methodologies in shipbuilding
- 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 Certificate will place Naval Engineering professionals at the forefront of the latest developments in the sector"

This program is the best investment you can make in selecting a refresher program in Research, Development and Innovation in Naval Engineering. We offer you quality and free access to content"

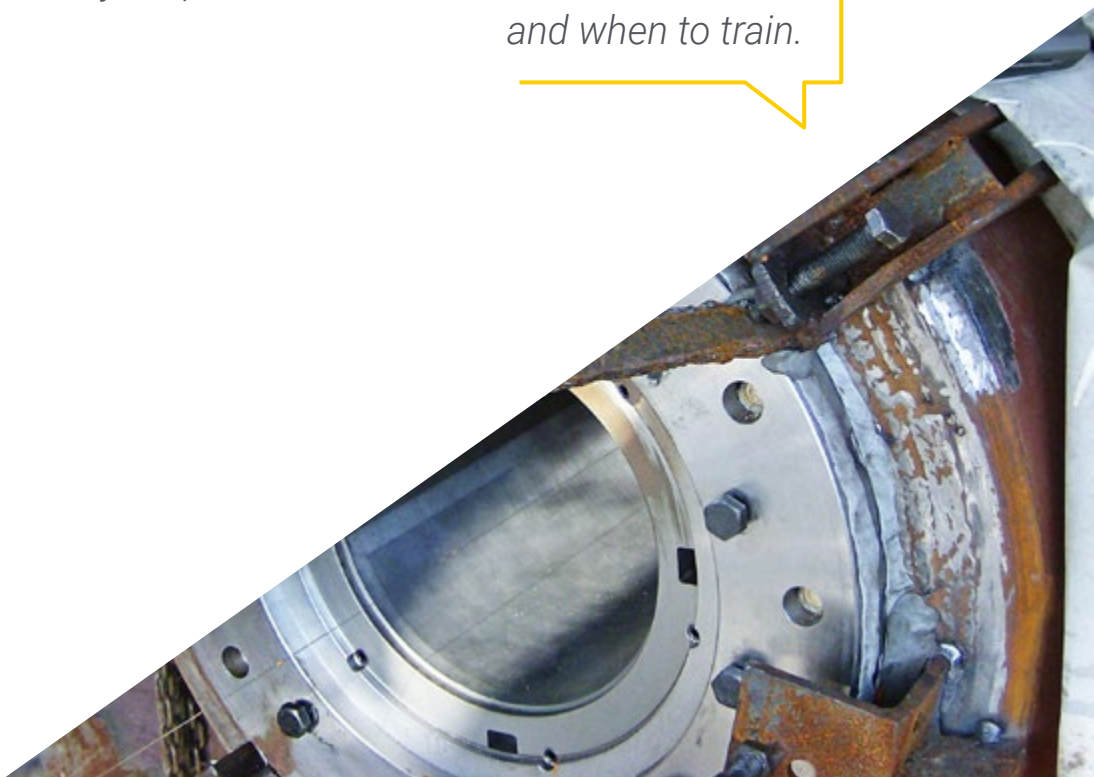
This program comes with the best educational material, providing you with a contextual approach that will facilitate your learning.

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

The teaching staff includes professionals in naval engineering, who bring their 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 program designed 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 program. To that end, students will have the help of an innovative, interactive video system made by recognized and extensively experienced experts in Research, Development and Innovation in Naval Engineering.



02

Objectives

The program in Research, Development and Innovation in Naval Engineering is designed to facilitate professional performance by acquiring knowledge of the main novelties in the field, which will enable engineers to practice their profession with the highest quality and professionalism.

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

General Objectives

- Possess an overall vision of all stages of the life cycle of a naval project
- Possess and understand knowledge that provides the basis for developing research ideas
- Conceive and develop appropriate technical and economical solutions for naval projects
- Develop the conceptual design that meets shipowner requirements, cost estimates and risk assessments
- Work and negotiate with shipowners from the point of view of design, define ship missions, and assist shipowners in defining ships according to the requirements
- Apply acquired knowledge and problem-solving skills in new environments related to Naval Engineering
- Solve complex problems and make responsible decisions
- Acquire the basis of scientific and technological knowledge applicable to Naval and Ocean Engineering and management methods
- Organize and lead multidisciplinary work groups in multilingual environments
- Acquire the fundamental knowledge of ship design, structure, machinery and on-board installations
- Know the scope of detailed engineering of structure, outfitting, electricity, flag authorization and air conditioning
- Know how to organize and control the processes of construction, repair, transformation, maintenance and inspection of naval projects
- Delve into shipyard management, having a global and current vision of all shipyard departments
- Acquire the knowledge of ship operations throughout the entire flow line
- Possess detailed knowledge of the latest trends in innovation and development in the naval market in all stages of the life cycle of projects, from the initial stages of design to operations and vessel or artifact scrapping

Specific Objectives

- Become familiar with new innovative materials
- Update on new design methodologies for reliable design, risk analysis, FMEA, HAZID and HAZOP
- Know design basics for autonomous vessels
- Know how to develop digital twins
- Study the different concepts in developing clean and energy efficient ships
- Know the energy efficiency index, its calculation and use
- Know alternative fuels
- Differentiate between fixed and floating wind turbines
- Learn about the different concepts in wave energy utilization
- Apply tidal harnessing methods
- Know the new technologies in construction
- Discover new communication systems
- Know how to apply Blockchain technology in fleet management

Join us and we will help you achieve professional excellence"

03

Course Management

In its mission to provide students with the best teaching staff, TECH has selected for this program a number of active professors with extensive experience in the field of Innovation, Development and Research. They guarantee effective and accurate training by including in the program topics of interest and new concepts in the area. An advantage of having the best professionals is that they are open and make themselves available to address all student concerns, thus enriching the program with a human quality.

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

Management

Ms. López Castejón, María Ángeles

- Naval and Ocean Engineer School of Naval Engineering (ETSIN)
- 22 years of experience in Naval Engineering, Engineering and Shipyards
- Master's Degree in Occupational Risk Prevention Safety. MAPFRE
- PRL Auditor C.E.F
- Safety Coordinator
- C.A.P. University of Seville
- CCPC Co-Active Professional Certified Coach CTI
- Director of Marine Projects at SENER INGENIERIA Y SISTEMAS, S.A.
- Certified Professional Coach

Professors

Mr. De Vicente Peño, Mario

- Naval and Ocean Engineer School of Naval Engineering (ETSIN)
- Master's Degree at UPM: Numerical Simulation in Engineering with ANSYS
- 16 years of experience in Naval Engineering and Classification Society
- Associate Professor of Structures and Shipbuilding at UPM, (ETSIN): Official Degree Courses: Finite Element Models in Ship Structures (1C), Master Frame Calculation (2C), MAERM Topics: Structural Design (1C), Structural Analysis of Offshore Platforms (2C)
- Director of Marine Projects at SENER INGENIERIA Y SISTEMAS, S.A.
- ETSIN Associate Professor

Mr. Fiorentino, Norberto Eduardo

- Naval Engineer Buenos Aires Technology Institute (ITBA)
- Master's Degree in Environmental Management Postgraduate Course in Ship Construction, Repair and Maintenance
- 26 years of experience in academic management and university teaching
- 13 years of experience in Naval Engineering
- 9 years of experience as a Technical Fleet Manager
- 6 years of experience as an Engine Section Chief in Shipyard Engineering
- Director of Marine Projects at SENER INGENIERIA Y SISTEMAS, S.A.
- Director of the Naval Engineering Department at ITBA

Mr. Sánchez Plaza, Carlos

- Naval and Ocean Engineer School of Naval Engineering (ETSIN)
- 26 years of experience in Naval Engineering
- PADE, Senior Management Plan, IESE (University of Navarra)
- COO Deoleo
- Fishing and Merchant Fleet Management Specialist
- Member of the Bureau Veritas Naval Technical Committee

Mr. Del Río González, Manuel

- Researcher in the use of composites for warships and submarines Fellowship at Navantia
- Researcher on the analysis of the European cruise ship market and its environmental impact
- MBA EAE Business School
- Master's Degree in Naval Engineering Polytechnic University of Cartagena (UPCT)
- Degree in Naval Architecture and Marine Systems Engineering Polytechnic University of Cartagena (UPCT)
- Co-author of Urethane-Acrylate/Aramid Nanocomposites Based on Graphenic Materials: A Comparative Study of Their Mechanical Properties
- Co-author and speaker of the paper Cruise Port Centrality and Spatial Patterns of Cruise Ship-Ping in the Mediterranean Sea, presented at the 2021 World Shipping Portugal Congress

Mr. Labella Arnanz, José Ignacio

- Naval and Ocean Engineer School of Naval Engineering (ETSIN)
- Master's Degree in Financial Management. CEF
- Master's Degree in Senior Accounting CEF
- Master's Degree in Commercial Management and Marketing GESCO ESIC
- NACE CIP I and II
- General Manager at DEL MONTE SERVICIOS INDUSTRIALES, a company specialized in surface treatment, protection and insulation in the naval sector
- 24 years of experience in Naval and Industrial Engineering, Production and Maintenance
- 11 years of experience in General Management

Mr. Martín Sánchez, José Luis

- Naval and Ocean Engineer, School of Naval Engineering (ETSIN)
- Master's Degree in Integral Project Management
- 26 years of experience in Naval Engineering
- Director of Marine Projects at SENER INGENIERIA Y SISTEMAS, S.A.

04

Structure and Content

The contents have been structured and designed by the best professionals in Naval and Ocean Engineering, who have extensive experience and recognized prestige in the profession, and who are aware of the benefits that the latest educational technology can bring to higher education.

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

Module 1. Research, Development and Innovation in Naval Engineering

1.1. New Design Methodologies: Reliability
- 1.1.1. Risk Analysis
- 1.1.2. FMEA
- 1.1.3. HAZID
- 1.1.4. HAZOP

1.2. Engineering: R&D&I: New Materials
- 1.2.1. New Materials

1.3. R&D&I: Digital Twin Technology
- 1.3.1. Product
- 1.3.2. Production
- 1.3.3. Performance

1.4. R&D&I: Autonomous Vessels
- 1.4.1. Autonomous Vessels
- 1.4.2. Regulations
- 1.4.3. Difference from Intelligent Vessels
- 1.4.4. Classification Societies
- 1.4.5. Examples of Autonomous Vessel Projects

1.5. R&D&I in Energy (I): Alternative Fuels
- 1.5.1. Liquefied Natural Gas (LNG): The Clean Alternative to Multi-Disciplinary Design Optimization (MDO)
- 1.5.2. Hydrogen as a Future Naval Fuel
- 1.5.3. Fuel Cell

1.6. R&D&I in Energy (II): Energy Efficiency
- 1.6.1. Clean Concepts for Vessels
- 1.6.2. EEDI: Efficient Vessels
- 1.6.3. EEOI
- 1.6.4. SEEMP

1.7. R&D&I in Energy (III): Renewable Energies
  1.7.1. Floating Wind Turbines
  1.7.2. Wave Energy
  1.7.3. Tidal
1.8. Innovation and New Technologies in Construction
  1.8.1. Augmented Reality and 3D Vision, Virtual Reality
  1.8.2. Productive Improvements Based on Information Management
1.9. Innovation in Operation (I): New Communication Systems
  1.9.1. Satellite Systems
  1.9.2. Impulse Systems (Sonar, Radars)
1.10. Innovation in Operation (II): Applying Blockchain Technology in Fleet Management
  1.10.1. Definition of Blockchain
  1.10.2. Application Examples

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

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

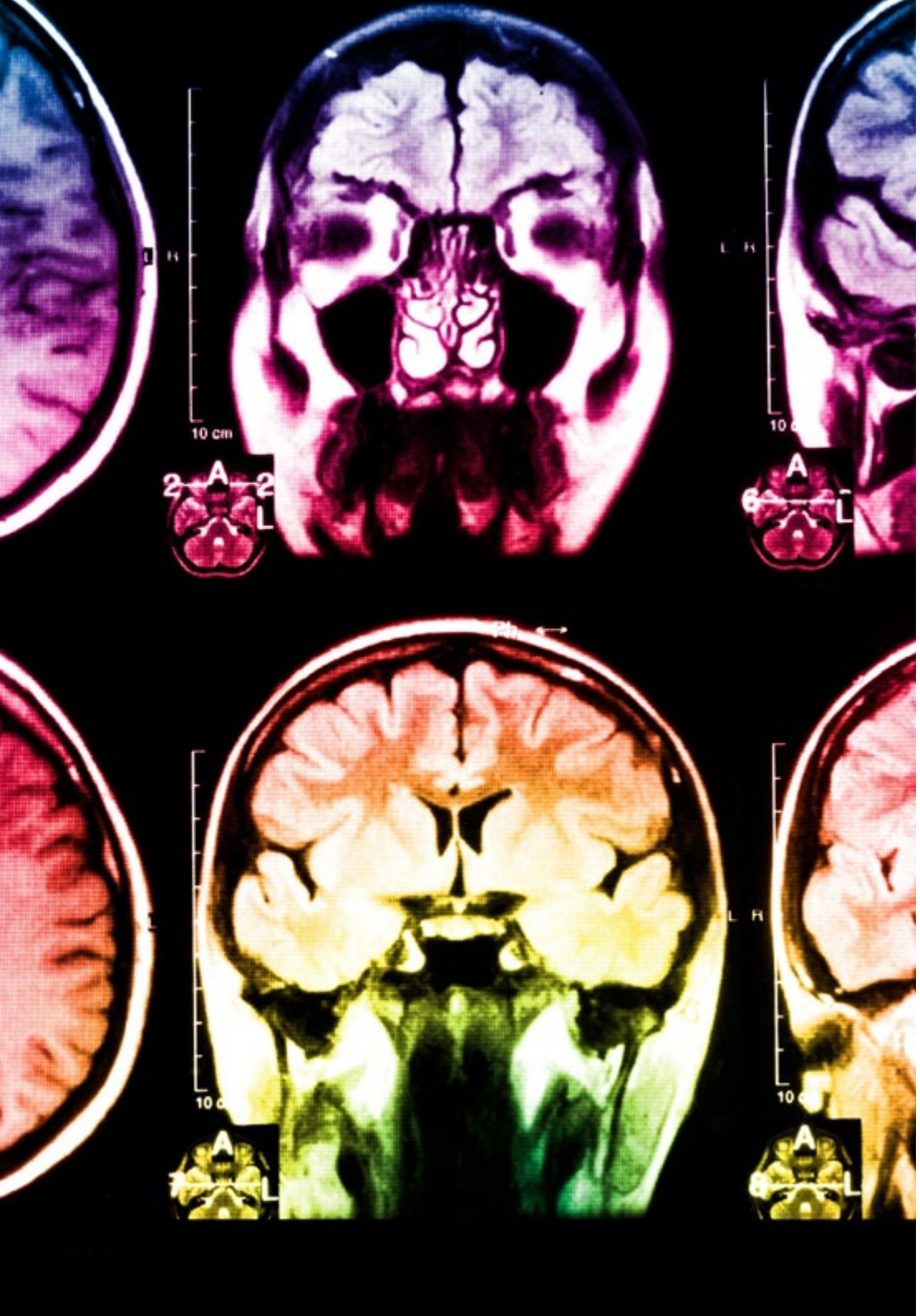
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

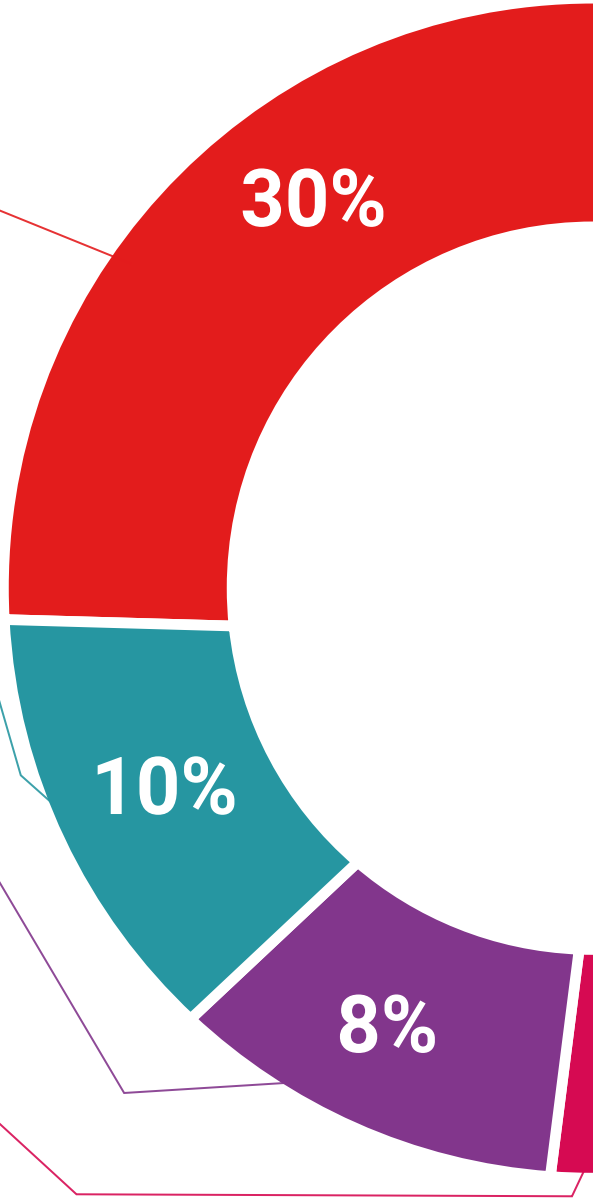
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

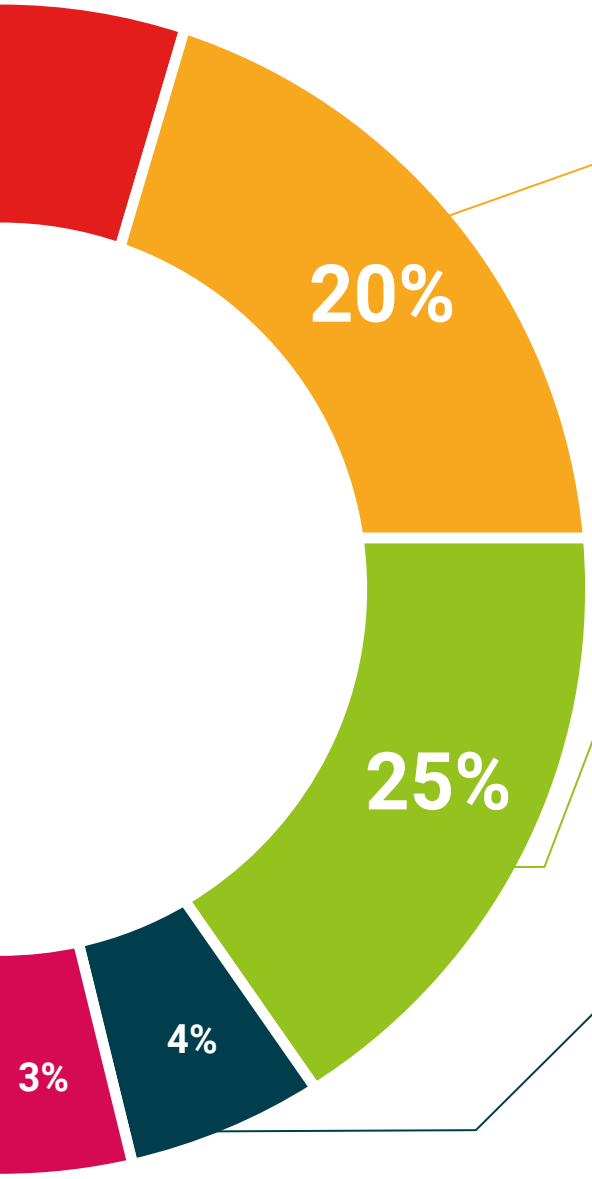
Practising Skills and Abilities

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 Certificate in Research, Development and Innovation in Naval Engineering guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.

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

This **Postgraduate Certificate in Research, Development and Innovation in Naval Engineering** 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 Research, Development and Innovation in Naval Engineering**

Official Number of Hours: **150 h.**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Awards the following

CERTIFICATE

to

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

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Research, Development and Innovation in Naval Engineering

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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- Dedication: **16h/week**
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