

Postgraduate Certificate Improvement of Geotechnical Properties and Land Treatments





Postgraduate Certificate Improvement of Geotechnical Properties and Land Treatments

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/us/engineering/postgraduate-certificate/improvement-geotechnical-properties-land-treatments

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01

Introduction

During the course of this program, students will learn everything related to the definition of the treatments according to their typology, drilling, injection, chemical treatment, as well as the soil improvement capacity of each one of them. Their different applications and the suitability of each one will be analyzed, depending on the conditions of the land to be treated and the work to be carried out. These contents will allow the professional to carry out an original and application-oriented analysis of the theoretical concepts developed throughout the Postgraduate Certificate, in such a way that they will unequivocally become a much more capable and sought-after professional.





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Learn how to analyze when the chosen terrain is appropriate in the long term for the objective set with this TECH Postgraduate Certificate”

The Postgraduate Certificate in Improvement of Geotechnical Properties and Land Treatments is academically designed to provide a deep knowledge, based on advanced concepts already acquired in the world of civil engineering and from a practical application point of view, of the most important geotechnical aspects that can be found in different types of civil works.

On many occasions, when observing the geotechnical characteristics of the ground on which it is desired to act, the characteristics of the same, its current state, or its expected long-term behavior is not appropriate for the purpose set.

The field of ground treatments is in constant evolution as the progress in the execution techniques and the materials used makes it an aspect in constant evolution.

This Postgraduate Certificate will present the definition of the treatments according to their typology, drilling, injection, chemical treatment, as well as the capacity of improvement of the ground that each one of them provides. Their different applications and the convenience of each one will be analyzed, depending on the conditions of the land to be treated and the work to be carried out.

Therefore, the Postgraduate Certificate in Improvement of Geotechnical Properties and Land Treatments integrates the most complete and innovative educational program in the current market in terms of knowledge and latest available technologies, as well as encompassing all the sectors or parties involved in this field. Likewise, the Postgraduate Certificate is made up of exercises based on real cases of situations currently managed or previously faced by the teaching team.

All this, throughout a 100% online learning that provides the student with the ease of being able to take it wherever and whenever they want. You will only need a device with internet access, and you will be able to access a universe of knowledge that will be the main basis for engineers to position themselves in a sector that is increasingly demanded by companies in various sectors.

This **Postgraduate Certificate in Improvement of Geotechnical Properties and Land Treatments** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ◆ The development of practical cases presented in Courses in Civil and Geotechnical 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.
- ◆ Its special emphasis on innovative methodologies
- ◆ Theoretical lessons, questions to the course, discussion forums on controversial issues and individual reflection papers
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



Apply the latest advances in this field and give your curriculum a boost of value thanks to this complete Postgraduate Certificate from TECH"

“

You will be provided with innovative teaching materials and resources that will facilitate the learning process and the retention of the contents learned for a longer period of time”

The program's teaching staff includes professionals from the sector who contribute their work experience to this educational 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 during the course. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced engineering experts.

Only with the right knowledge, will engineers be able to grow within an industry that increasingly demands more expert professionals.

A 100% online specialization that will allow you to combine your studies with the rest of your daily activities.



02

Objectives

TECH has designed this Postgraduate Certificate with the aim of training engineering professionals to be able to design, implement and work in civil works, knowing in depth everything related to the geotechnical characteristics of the land on which you want to act, the characteristics of the same, its current state, or its expected long-term behavior. To this end, specific aspects of the profession that stand out for their enormous importance in today's business landscape will be addressed, and for which large corporations are increasingly demanding competent engineers with a solid specialized training.





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Tech pursues only one goal with its specializations: to catapult students toward professional success”



General Objectives

- ◆ Delve deeper into kinds of grounds, not only in their typology but also in their behavior Not only in the evident differentiation of stresses and deformations of soils and rocks, but also under particular but very common conditions, such as the presence of water or seismic disturbances
- ◆ Efficiently recognize the needs for soil characterization, being able to design campaigns with the optimal means for each type of structure, optimizing and giving added value to the study of materials
- ◆ Identify the behavior of slopes and semi-subterranean structures such as foundations or walls in their different typologies This complete identification must be based on understanding and being able to anticipate the behavior of the soil, the structure and its interface
- ◆ Know in detail the possible faults that each set can produce and as a consequence have a deep understanding of the repair operations or improvement of materials to mitigate damage
- ◆ Receive a complete tour of tunnel and gallery excavation methodologies, analyzing all drilling procedures, design constraints, support and lining



A program designed through practical cases that will teach you how to act in real situation in daily practice in your profession”





Specific Objectives

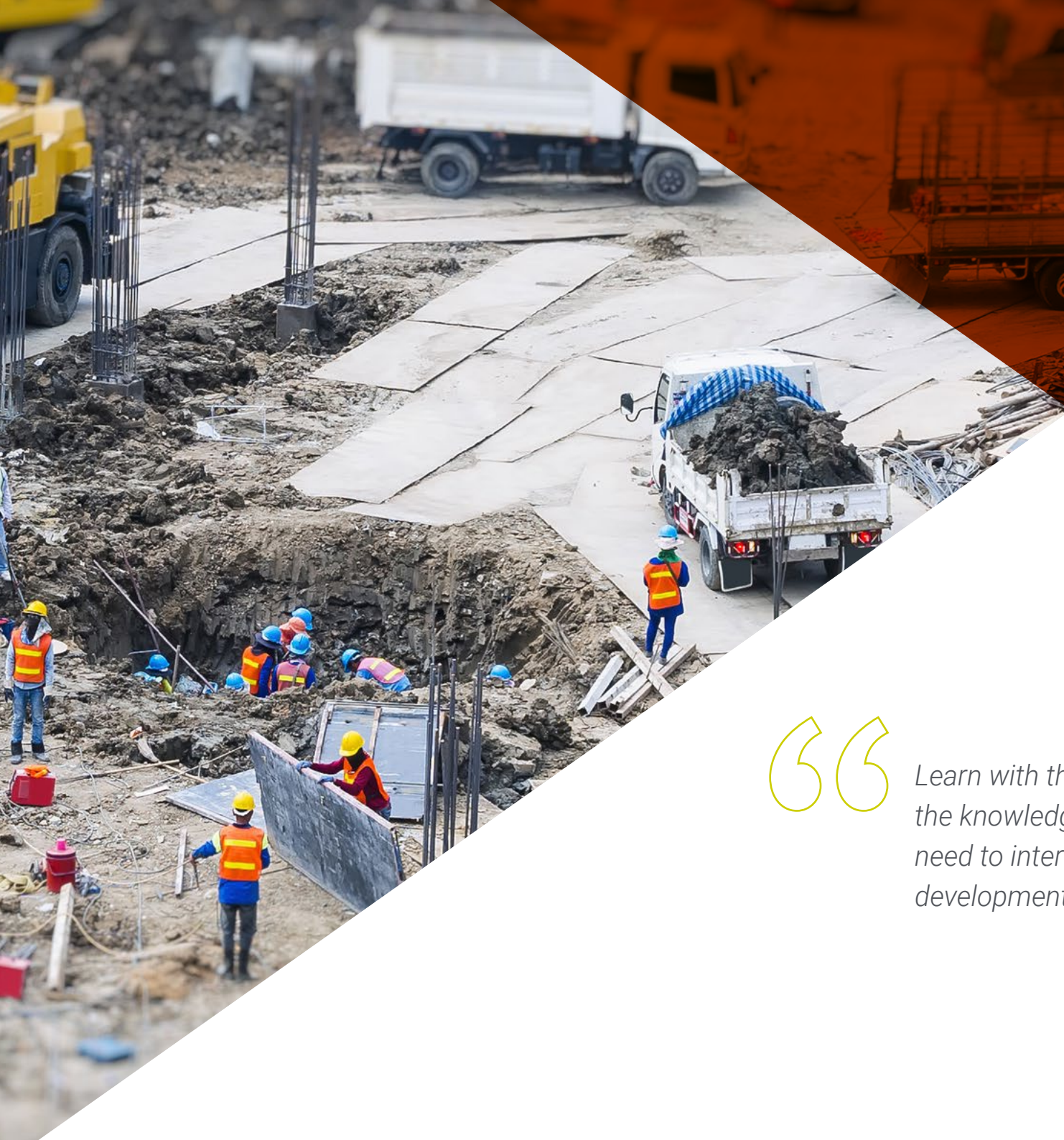
- ◆ Acquire a thorough knowledge of the different types of existing land treatments.
- ◆ Analyze the range of existing typologies and their correspondence with the improvement of the different properties
- ◆ Know precisely the variables that are found in the processes of land improvement by injection Consumption, requirements, advantages and disadvantages
- ◆ Present, in an extensive way, gravel column treatments as elements of land treatment of relatively little use, but with remarkable technical applications
- ◆ In-depth presentation of soil treatments by chemical treatment and freezing, as little-known treatments, but with very good spot applications
- ◆ Define the applications of preloading (preconsolidation), which was covered in a previous module, as an element of soil treatment to accelerate the evolution of soil behavior
- ◆ Complete the knowledge of one of the most used ground treatments in subway works, such as micropile umbrellas, defining applications different from the usual ones and the characteristics of the process
- ◆ Deal in detail with soil decontamination as a land improvement process, defining the typologies that can be used

03

Course Management

TECH follows strict criteria for all its educational programs. This guarantees students that by studying here they will find the best educational content taught by the best professionals in the sector. In this sense, this Postgraduate Certificate in Improvement of Geotechnical Properties and Land Treatments has highly prestigious professionals within this area, who pour into the Renovation. the experience of their years of work, as well as the knowledge acquired from research in the field. All to provide the engineer with a high-level program, which will enable them to practice in national and international environments with greater guarantees of success.





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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



Dr. Estébanez Aldonza, Alfonso

- Civil Engineer, Specialist in Geotechnics and Tunnels and Technical Director of Alfestal Engineering
- Project Manager in the Department of Tunnels and Underground Works in Inarsa S.A
- Assistant Technician in the Geology and Geotechnical Department of Intecsa-Inarsa
- International Consultant and Project Manager at D2
- PhD student of the E.T.S.I. Roads, Canals and Ports. U.P.M. in the Department of Terrain Engineering
- Civil Engineer from the Polytechnic University of Madrid
- Health and Safety Coordinator in Construction Works program registered by the CAM nº 3508

Professors

Dr. Sandin Sainz-Ezquerro, Juan Carlos

- ◆ Responsible for SOFiSTiK customer service and support
- ◆ WTT & Mega Projects Engineer DYWIDAG
- ◆ Head of the Structures Department at Alfestal Ingeniería
- ◆ Structural Civil Engineer at TPF Getinsa Euroestudios SL
- ◆ Structural Calculation Engineer at Paymascotas
- ◆ Director of the Structures Department at Alfestal Ingeniería
- ◆ Civil Engineer by the Superior Technical School of Civil Engineering of the Polytechnic University of Madrid

Dr. Clemente Sacristan, Carlos

- ◆ Civil Engineer, Linear Works Site Manager
- ◆ Site Manager at Construcciones y obras Llorente S.A. Collosa
- ◆ Collaborator in ALFESTAL, Engineering
- ◆ Construction Manager at Coprosa
- ◆ Executive at BALGORZA S.A
- ◆ Occupational risk prevention course for construction company managers
- ◆ Advanced course in management of large turnkey projects (EPC)
- ◆ Civil Engineer graduated from the Polytechnic University of Madrid

Ms. Lope Martín, Raquel

- ◆ Geological Engineer
- ◆ PROINTEC Technical Department
- ◆ Geological Engineer Complutense University of Madrid UCM
- ◆ Course on Geotechnics Applied to Building Foundations
- ◆ Course on Technical Control for Property and Casualty Insurance Geotechnics, foundations and structures



A unique, crucial and decisive learning experience to boost your professional development"

04

Structure and Content

The syllabus of the Postgraduate Certificate is structured as a comprehensive tour through each and every one of the concepts required to understand and work in this field. Thus, through a novel didactic approach, based on the practical application of the contents, the engineer will learn and understand the functioning of geotechnics and foundations, knowing how to design and implement projects in this sense, providing high safety indexes and services to the companies. This, in addition to adding value to your professional profile, will make you a much better prepared professional to work in a variety of environments.





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

Module 1. Land Treatment and Improvement

- 1.1. Objectives, Movements and Property Enhancement
 - 1.1.1. Internal and Global Property Enhancement
 - 1.1.2. Practical Objectives
 - 1.1.3. Improvement of Dynamic Behaviours
- 1.2. Improvement by High Pressure Mixing Injection
 - 1.2.1. Typology of Soil Improvement by High-pressure Grouting
 - 1.2.2. Jet-Grouting Characteristics
 - 1.2.3. Injection Pressures
- 1.3. Gravel Columns
 - 1.3.1. Overall of Gravel Columns
 - 1.3.2. Quantification of Land Property Improvements
 - 1.3.3. Indications and Contraindications of Use
- 1.4. Improvement by Impregnation and Chemical Injection
 - 1.4.1. Characteristics of Injections and Impregnation
 - 1.4.2. Characteristics of Chemical Injections
 - 1.4.3. Method Limitations
- 1.5. Freezing
 - 1.5.1. Technical and Technological Aspects
 - 1.5.2. Different Materials and Properties
 - 1.5.3. Application and Limitation Fields
- 1.6. Preloading, Consolidations and Compactions
 - 1.6.1. Preloading
 - 1.6.2. Drained Preloading
 - 1.6.3. Control During Ejection
- 1.7. Improvement by Drainage and Pumping
 - 1.7.1. Temporary Drainage and Pumping
 - 1.7.2. Utilities and Quantitative Improvement of Properties
 - 1.7.3. Behavior After Restitution





- 1.8. Micropile Umbrellas
 - 1.8.1. Ejection and Limitations
 - 1.8.2. Resistant Capacity
 - 1.8.3. Micropile Screens and Grouting
- 1.9. Comparison of Long-term Results
 - 1.9.1. Comparative Analysis of Land Treatment Methodologies
 - 1.9.2. Treatments According to Their Practical Application
 - 1.9.3. Combination of Treatments
- 1.10. Soil Decontamination
 - 1.10.1. Physicochemical processes
 - 1.10.2. Biological Processes
 - 1.10.3. Termical Processes

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A unique learning opportunity that will catapult your career to the next level Don't let it slip away"

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.



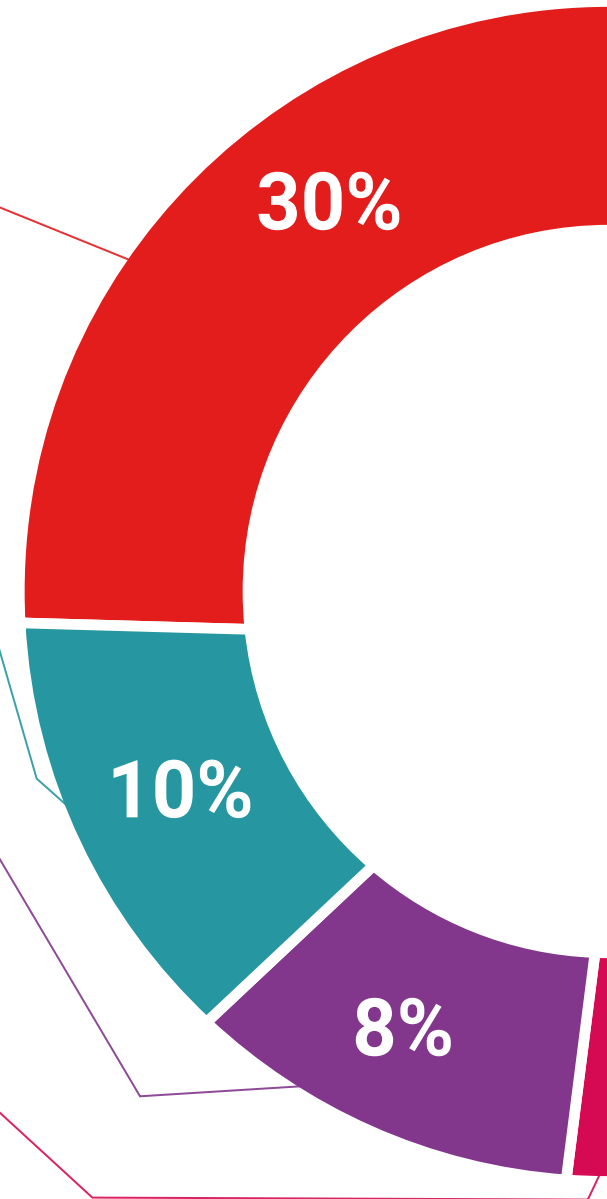
Practising Skills and Abilities

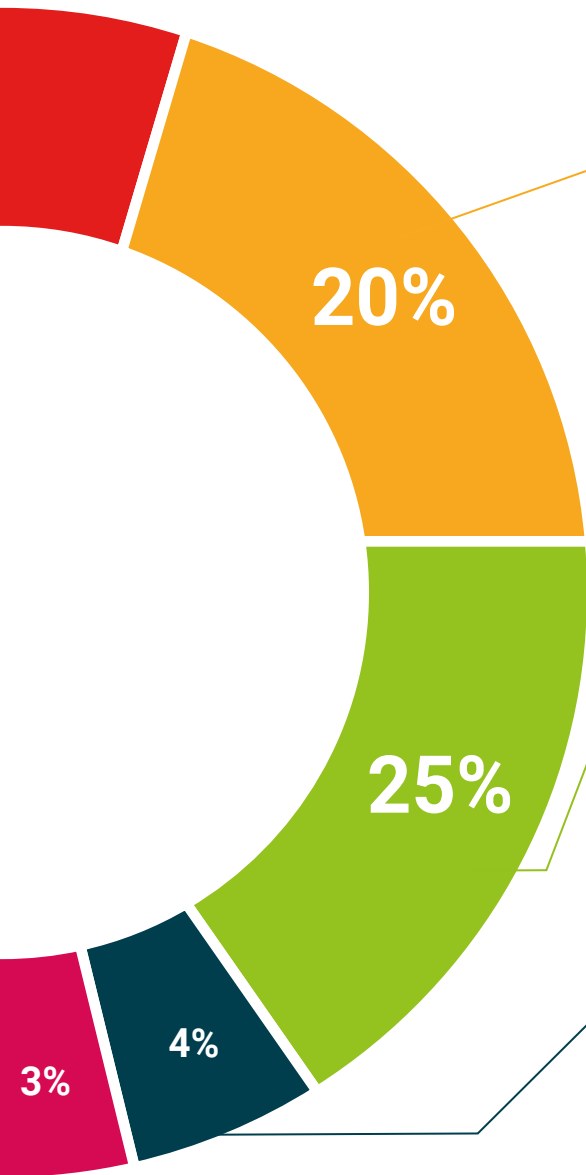
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



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 Certificate in Improvement of Geotechnical Properties and Land Treatments guarantees, in addition to the most accurate and up-to-date knowledge, access to a Postgraduate Certificate issued by TECH Global University.



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Include in your training a Postgraduate Certificate in Improvement of Geotechnical Properties and Land Treatments: a highly qualified added value for any professional in this area”

This private qualification will allow you to obtain a **Postgraduate Certificate in Improvement of Geotechnical Properties and Land Treatments** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University, is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Improvement of Geotechnical Properties and Land Treatments**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



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



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Postgraduate Certificate

Improvement of Geotechnical Properties and Land Treatments

