

Postgraduate Certificate Slope Analysis and Stability





Postgraduate Certificate Slope Analysis and Stability

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

Website: www.techtitute.com/us/engineering/postgraduate-certificate/slope-analysis-stability

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01

Introduction

The program in Slope Analysis and Stability, besides standing out the differences in slope behavior in rocks and soils, analyzes the different elements that influence their behavior, the treatment of the geological data to be obtained and observes the necessary analyses for a correct knowledge of the components and behavior of slopes. These contents will allow the professional to perform an original and application-oriented analysis of the theoretical concepts developed throughout the program.





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Geotechnical slope projects are on the rise, and acquiring the skills to operate successfully in this sector is a highly disruptive skill in an ever-growing industry”

The Postgraduate Certificate in Slope Analysis and Stability is academically designed to provide in-depth 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.

The content ranges from the specific behavior of soils and rocks, with a constant differentiation of both types of terrain throughout all the Topics, to their direct application in foundations and structures.

The Postgraduate Certificate, has a thematic that mixes some of them with more applied theoretical load (such as those related to the models of ground behavior, the necessary requirements for a good identification of soils and rocks or the interaction of the ground with seismic disturbances), with others with eminent component of practical analysis, where the knowledge acquired on the behavior of the ground and its stress-strain states of this first part, are applied to the usual structures of geotechnical engineering: slopes, walls, screens, tunnels...

The Postgraduate Certificate, besides standing out the differences in the behavior of slopes in rocks and soils, analyzes the different elements that influence their behavior, the treatment of geological data to be obtained and observes the necessary analyses for a correct knowledge of the components and behavior of slopes.

But beyond simple modeling, slopes have a series of associated processes, such as their protection as temporary or long-term works and their most common practical uses, which will be the subject of the topics of this module.

In short, the Postgraduate Certificate in Slope Analysis and Stability integrates the most complete and innovative educational program in the current market in terms of knowledge and latest available technologies, in addition to encompassing all the sectors or parties involved in this field. The program is also 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 training 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 Slope Analysis and Stability** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ Practical cases presented by experts in Civil Engineering and Geotechnics
- ◆ 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 expert, debate forums on controversial topics, and individual reflection assignments
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



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"

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TECH puts in your hand a great opportunity that will allow you to expand your knowledge and become a first level professional"

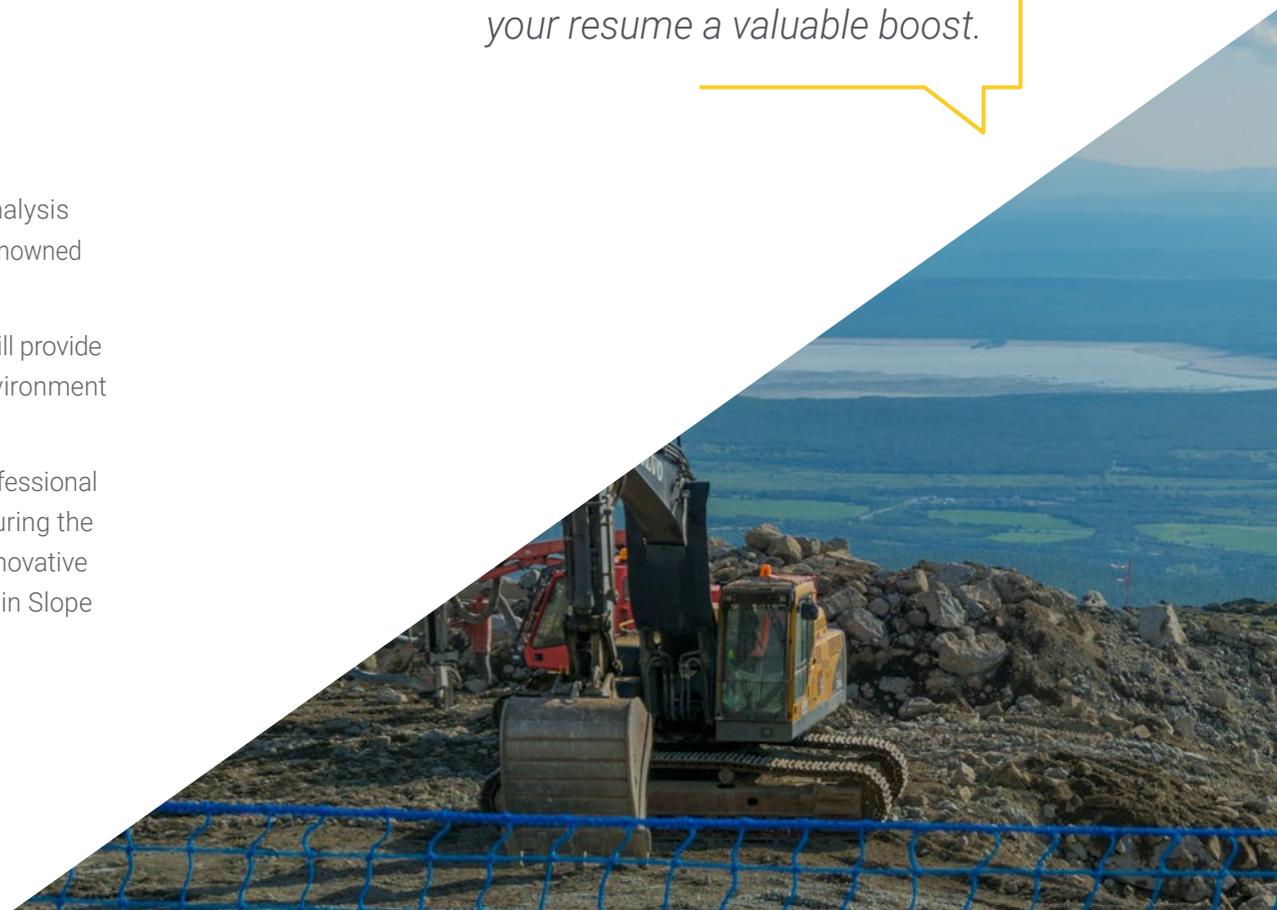
A 100% online education that will allow you to combine your studies with the rest of your daily activities.

Apply the latest advances in geotechnical slope behavior in your daily practice and give your resume a valuable boost.

Its teaching staff includes professionals belonging to the field of Slope Analysis and Stability, who contribute their work experience to this program, as well as renowned specialists from reference societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide 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 educational year. For this purpose, the professional will be assisted by an innovative interactive video system developed by renowned and experienced experts in Slope Analysis and Slope Stability.



02

Objectives

TECH has designed this Postgraduate Certificate with the objective of training engineering professionals to be able to design, implement and work in civil works, knowing in depth everything related to the geotechnical behavior of slopes and the technical and professional aspects at national and international level that directly affect it. 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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With this program, TECH has only one goal: to help you grow in your profession and become a prestigious engineer”



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





Specific Objectives

- ◆ Determine, for soils and rocks, the stability conditions and behavior of slopes, whether it is stable or unstable, and the stability margin
- ◆ Define the loads to which each part of the slope is subjected , and the operations that can be carried out on them
- ◆ Investigate the potential mechanisms of slope failure , and the analysis of practical cases of this type of failure
- ◆ Determine the sensitivity or susceptibility of slopes to different mechanisms or triggering factors, including external effects such as the presence of water, the effect of rainfall, earthquakes, etc.
- ◆ Compare the effectiveness of different remediation or stabilization options and their effect on slope stability
- ◆ Learn more about the different options for improving and protecting slopes, from the point of view of structural stability and the conditions to which they may be subjected during their service life
- ◆ Design optimal slopes in terms of safety, reliability and economy
- ◆ Review the application of slopes in hydraulic works as a major part of the design and use of major slopes
- ◆ Detail the calculation methodologies associated with finite elements currently in use for the design of this type of elements

03

Course Management

TECH applies a criterion based on high quality in all its specializations. This guarantees students that by studying here they will find the best educational content taught by the best professionals in the sector. In this way, this Postgraduate Certificate in Slope Analysis and Stability has highly prestigious professionals in this area, who bring to the program 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

- ◆ Civil Engineer, Specialist in Structures
- ◆ WTT & Mega Projects Engineer. DYWIDAG
- ◆ Responsible for the structures department Alfestal Engineering
- ◆ Responsible for SOFISTIK customer service and support Calter Engineering
- ◆ Civil structural engineer TPF Getinsa Euroestudios, S.L.
- ◆ Structural calculation engineer Paymascotas
- ◆ Director of the Structures Department Alfestal
- ◆ Lecturer in the BIM Master's program developed at the Colegio de Caminos.
- ◆ SOFISTIK AG Technical Assistance Program for Spain and Latin America
- ◆ Civil Engineer graduated the ETSI of, Canals and Ports from the Polytechnic University of Madrid
- ◆ Pursuing a Doctorate from E.T.S.I. UPM Civil Engineering Department in the Structures Department
- ◆ Course on integration of BIM technology in structural design

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, key, and decisive educational experience to boost your professional development"

04

Structure and Content

The Postgraduate Certificate syllabus 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. In this way, through a novel didactic approach, based on the practical application of the contents, the engineer will learn and understand the functioning of Slope Analysis and Stability, 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 complete syllabus focused on the acquisition of knowledge and its conversion into real skills, created to propel you towards excellence”

Module 1. Slope Analysis and Stability

- 1.1. Slope Stability and Calculations
 - 1.1.1. Factors Affecting Slopes Stability
 - 1.1.2. Slope Foundation Stability
 - 1.1.3. Slope Body Stability
- 1.2. Factors That Influence Stability
 - 1.2.1. Geotechnical Stability
 - 1.2.2. Conventional Slope Loads
 - 1.2.3. Accidental Slope Loads
- 1.3. Ground Slopes
 - 1.3.1. Stability in Ground Slopes
 - 1.3.2. Elements Influencing Stability
 - 1.3.3. Calculation Methods
- 1.4. Rock Slopes
 - 1.4.1. Stability in Rock Slopes
 - 1.4.2. Elements Influencing Stability
 - 1.4.3. Calculation Methods
- 1.5. Foundation and Slope Base
 - 1.5.1. Soil Bearing Requirements
 - 1.5.2. Typology of Foundations
 - 1.5.1. Base Land Considerations and Improvements
- 1.6. Breakages and Discontinuities
 - 1.6.1. Typologies of Slope Instability
 - 1.6.1. Characteristic Detection of Stability Losses
 - 1.6.2. Short and Long-Term Stability Improvement
- 1.7. Slope Protection
 - 1.7.1. Parameters That Influence Stability Improvement
 - 1.7.2. Short and Long-Term Slope Protection
 - 1.7.3. Temporal Validity of Each Type of Protection Element
- 1.8. Slopes in Dams with Loose Material
- 1.9. Particular Features of Slopes in Dams
 - 1.9.1. Slope Behavior Under Loose Materials Dam Loads
 - 1.9.2. Auscultation and Monitoring of Slope Evolution





- 1.10. Dikes in Maritime Works
 - 1.10.1. Particular Features of Slopes in Maritime Works
 - 1.10.2. Slope Behavior Under Maritime Works
 - 1.10.3. Auscultation and Monitoring of Slope Evolution
- 1.11. Simulation and Comparative Software
- 1.12. Simulations for Slopes in Rock and Soil
- 1.13. Bidimensional Calculations
- 1.14. Finite Element Modeling and Long-Term Calculations

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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.

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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.



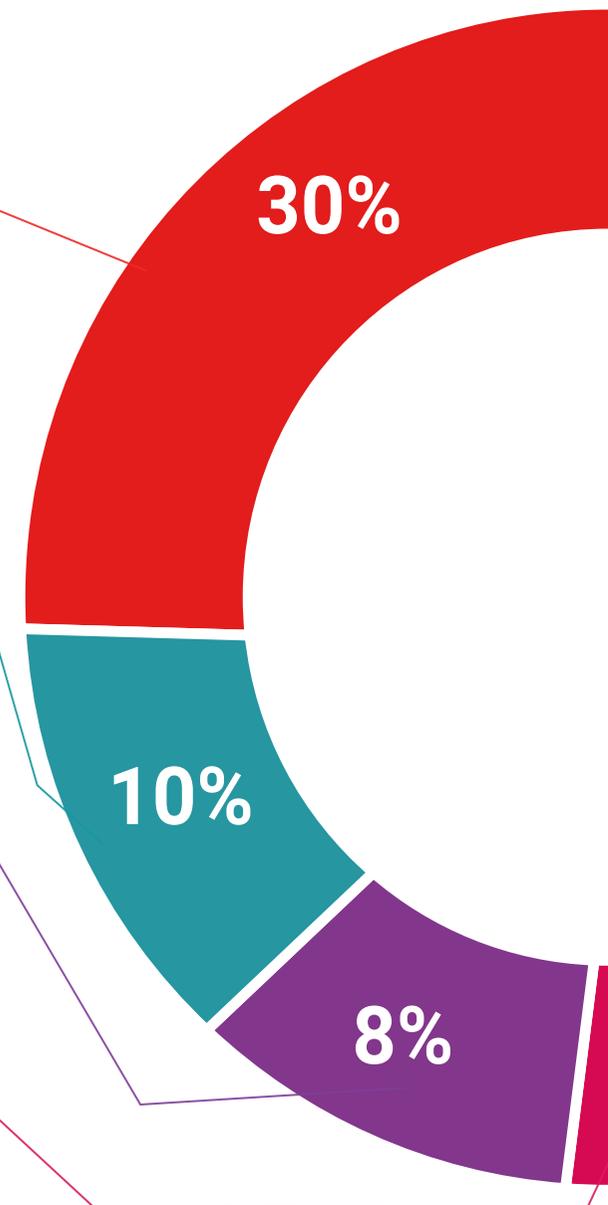
Practising Skills and Abilities

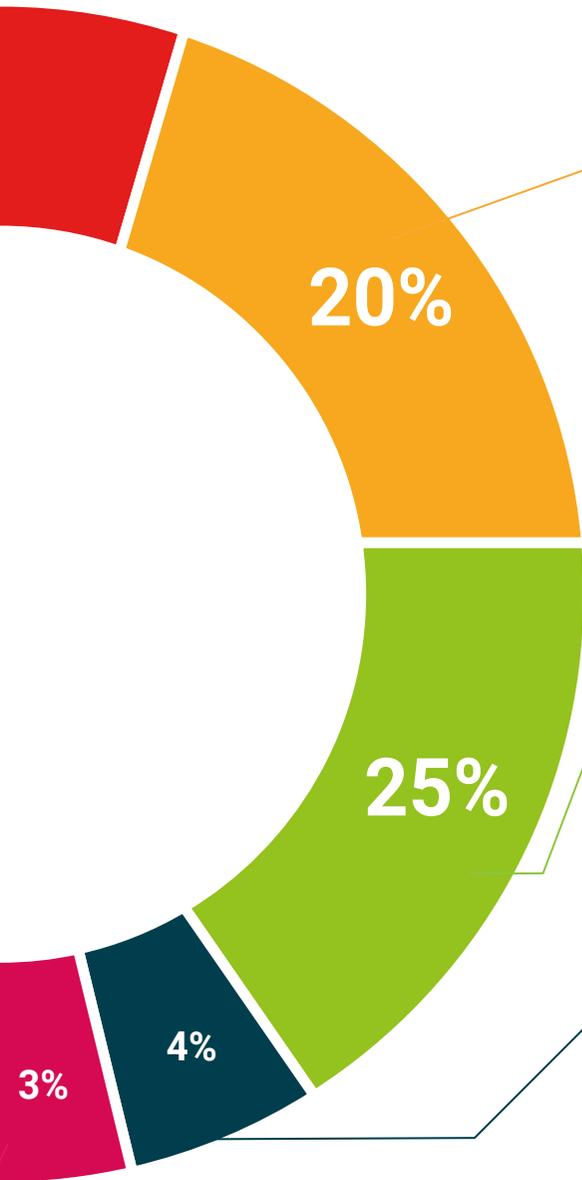
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



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

This Postgraduate Certificate in Slope Analysis and Stability guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.



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Include in your program a Postgraduate Certificate in Slope Analysis and Stability, a highly qualified added value for any professional in this area"

This **Postgraduate Certificate in Slope Analysis and Stability** 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 diploma 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 Slope Analysis and Stability**

Official N° of Hours: **150 h.**



*Apostille Convention. In the event that the student wishes to have their paper diploma 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 quality
development languages
virtual classroom



Postgraduate Certificate Slope Analysis and Stability

- » Modality: online
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Postgraduate Certificate Slope Analysis and Stability

