

# Postgraduate Certificate Geopositioning





## Postgraduate Certificate Geopositioning

- » 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/geopositioning](http://www.techtitute.com/in/engineering/postgraduate-certificate/geopositioning)

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# 01

# Introduction

Geopositioning is revolutionizing not only the industrial sector, but also economy in general. Geopositioning means situating a person, point or business on a cartographic map. As a result, more and more people and companies are using this technology for different purposes. Taking into account the usefulness of Geopositioning, this program addresses the different existing methods for positioning, with emphasis on GNSS and mobile positioning systems, their operation and the physical foundations on which they are based; both being the most widespread nowadays. All of this in just 6 weeks and in an online format.







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*Geopositioning hasn't stopped growing and reaching new sectors and uses. Be at the forefront of a booming market by taking this TECH program”*

This Postgraduate Certificate in Geopositioning addresses, in the first instance, the movements of the earth. These model the ability to obtain, through different systems, the position of any object of interest in a given time, defining the reference systems and their reference frames.

Likewise, it delves into the different positioning mechanisms, with emphasis on GNSS and mobile positioning systems, their operation and the physical foundations on which they are based, both of which are the most widespread today.

Regarding GNSS Positioning, it develops the different possible observation methods in addition to the precise point positioning or by its acronym "PPP". It also examines the GALILEO constellation, developed and put into operation by the European Space Agency (ESA), identifying the phases of implementation, commissioning, characteristics and advantages over existing systems.

All this, condensed in a program that stands out for its 100% online modality, for the quality of its contents and for the excellence of its highly specialized teaching staff. All this is what positions this program as the most useful and effective academic option in today's teaching landscape.

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

- ◆ Practical cases presented by experts in Geopositioning
- ◆ 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
- ◆ 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 know in depth the different Geopositioning systems such as GNSS among others thanks to this Postgraduate Certificate"*

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*With this program you will deepen your understanding of the phases, implementation, characteristics and advantages of the positioning system created from the study of the GALILEO constellation”*

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

*TECH offers you a comfortable and effective method for studying. It is you who decided when, where and how to study.*

*Gain in-depth knowledge in how the earth's movements condition Geopositioning with this Postgraduate Certificate.*

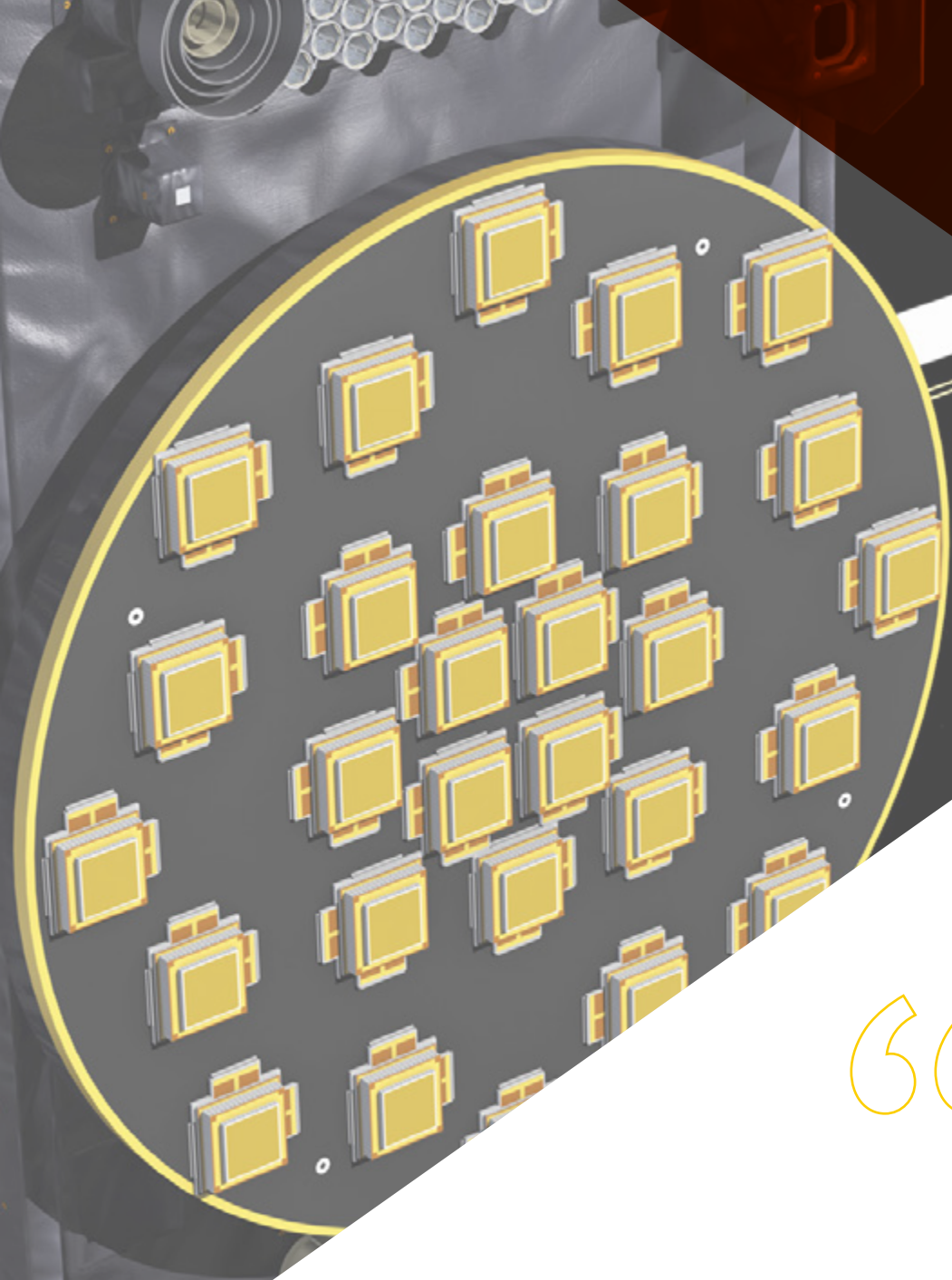


# 02 Objectives

Through unique and quality content, with the support of expert professionals and thanks to a 100% online study methodology, this Postgraduate Certificate in Geopositioning will provide the student with everything related to the different methods of terrestrial location, its operation and different uses. Thanks to all this, the engineer will achieve their goals, positioning themselves at the forefront of a continuously growing sector.







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*A unique study option due its methodology, which helps you to achieve your goals in a more accessible and efficient way”*



## General Objectives

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- ◆ Evaluate the positioning of urban and land planning within the concept of land, as well as the resources available on the Internet
- ◆ Generate specialized knowledge on LIDAR technology
- ◆ Analyze the impact of LIDAR data on the technology around us
- ◆ Integrate, manage and execute building information modeling projects

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*You are just one step away from taking your professional opportunities to another level. By enrolling in this program, there's no doubt that you will achieve it”*







## Specific Objectives

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- ◆ Create the reference systems and reference frames on which ge positioning is based
- ◆ Analyze the operation of Wlan, Wi-Fi, celestial and underwater positioning systems, paying special attention to GNSS and mobile systems
- ◆ Examine GNSS augmentation systems, their purpose and function
- ◆ Develop the signal propagation from its transmission on the satellite to its reception
- ◆ Discriminate the different GNSS observation methods and study differential GNSS systems and their protocols and standards
- ◆ Determining the positioning per precise point (PPP)
- ◆ Evaluate assisted positioning systems (A-GNSS) and their widespread use among mobile positioning systems

# 03

# Course Management

This program's teaching team is made up of active professionals and academics from the sector, who contribute all their knowledge and experience to this program, in order to provide the student with the best specialization on the market. Thanks to this complete program, engineers will have the necessary tools to position themselves as a reference in the world of Geopositioning.





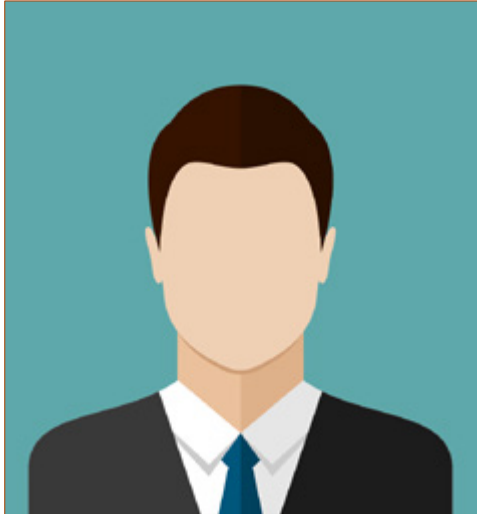


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*Don't miss out on this great opportunity to study with the best professionals in the sector”*



## Management



### Mr. Puértolas Salañer, Ángel Manuel

- ◆ Application development in .Net environment, Python development, SQL Server database management, system administration. ASISPA
- ◆ Topographical Surveyor Study and reconstruction of roads and accesses to towns. Ministry of Defence Embedded with UN forces in Lebanon
- ◆ Topographical Surveyor Topography per Project Ministry of Defence
- ◆ Topographical Surveyor Georeferencing of the old cadastre of the province of Murcia (Spain). Geoinformation and Systems SL
- ◆ Technical Engineer in Topography from the Polytechnic University Valencia
- ◆ Master's Degree in Cybersecurity from MF Business School and the Camilo José Cela University
- ◆ Web management, server administration and task development and automatization in Python Milcom
- ◆ Development of applications in .Net environment. SQL Server management Own software support Ecomputer

## Professors

### Mr. Moll Romeu, Kevin

- ◆ Graduate in Geodesic Engineering, Topography and Cartography from the Polytechnic University of Valencia
- ◆ Soldier in the Air Force at the Alcantarilla Air Base





# 04

# Structure and Content

For this Postgraduate Certificate, a group of high-level professionals have designed the most complete and up-to-date content compendium on the market. Thanks to this, the professional will acquire a solid base of knowledge with which they can operate in the Geopositioning sector. All this, condensed into a syllabus which is taught in just 6 weeks in a virtual format.







“

*Study at your own rhythm and  
place yourself as a Geopositioning  
expert in a simple way”*



## Module 1. Geopositioning

- 1.1. Geopositioning
  - 1.1.1. Geopositioning
  - 1.1.2. Objectives of the Positioning
  - 1.1.3. Earth Movements
    - 1.1.3.1. Translation and Rotation
    - 1.1.3.2. Precession and Nutation
    - 1.1.3.3. Pole Movements
- 1.2. Georeferencing Systems
  - 1.2.1. Reference Systems
    - 1.2.1.1. International Terrestrial Reference Systems. ITRS
    - 1.2.1.2. Local Reference Systems. ETRS 89 (European Datum)
  - 1.2.2. Reference Framework
    - 1.2.2.1. International Territorial Reference Framework. ITRF
    - 1.2.2.2. International GNSS Reference Framework. Materialization of ITRS
  - 1.2.3. International Ellipsoids of Revolution GRS-80 and WGS-84
- 1.3. Positioning Mechanisms or Systems
  - 1.3.1. GNSS Positioning
  - 1.3.2. Mobile Positioning
  - 1.3.3. WLAN Positioning
  - 1.3.4. Wi-Fi Positioning
  - 1.3.5. Celestial Positioning
  - 1.3.6. Submarine Positioning





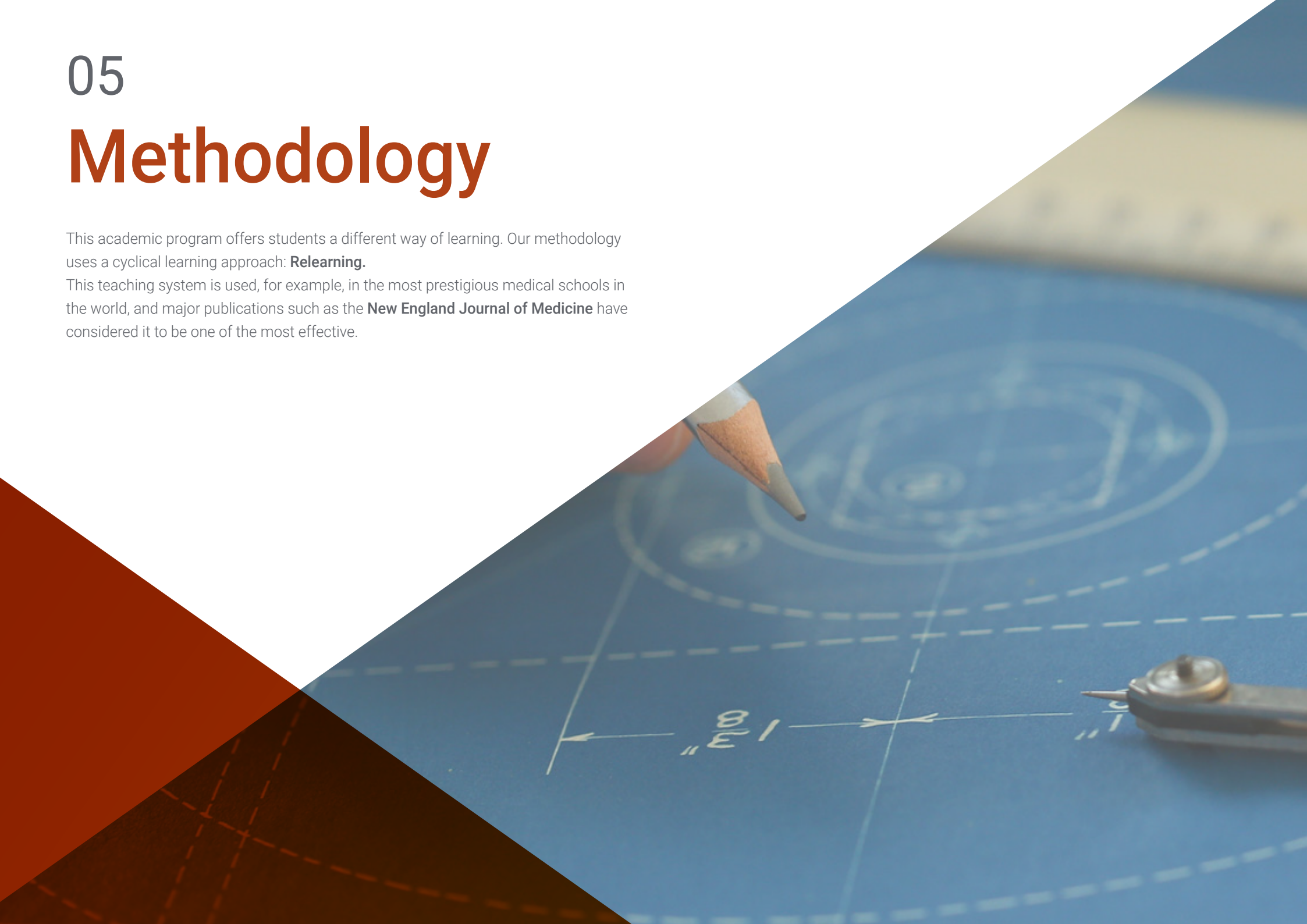
- 1.4. GNSS Technologies
  - 1.4.1. Types of Satellite According to Orbit
    - 1.4.1.1. Geostations
    - 1.4.1.2. Medium Orbit
    - 1.4.1.3. Low Orbit
  - 1.4.2. Multiconstellation GNSS Technologies
    - 1.4.2.1. NAVSTAR Constellation
    - 1.4.2.2. GALILEO Constellation
      - 1.4.2.2.1. Phases and Carrying Out the Project
  - 1.4.3. GNSS Clock or Oscillator
- 1.5. Augmentation Systems
  - 1.5.1. Satellite-Based Augmentation System (SBAS)
  - 1.5.2. Ground-Based Augmentation System (GBAS)
  - 1.5.3. Assisted GNSS (A-GNSS)
- 1.6. Propagation of the GNSS Signal
  - 1.6.1. GNSS Signal
  - 1.6.2. Atmosphere and Ionosphere
    - 1.6.2.1. Elements of Wave Propagation
    - 1.6.2.2. Behavior of the GNSS Signal
    - 1.6.2.3. Ionospheric Effect
    - 1.6.2.4. Ionospheric Models
  - 1.6.3. Troposphere
    - 1.6.3.1. Tropospheric Refraction
    - 1.6.3.2. Tropospheric Models
    - 1.6.3.3. Tropospheric Delays
- 1.7. GNSS Error Sources
  - 1.7.1. Satellite and Orbit Errors
  - 1.7.2. Atmospheric Errors
  - 1.7.3. Errors in Signal Reception
  - 1.7.4. Errors due to External Devices
- 1.8. Observation and GNSS Positioning Techniques
  - 1.8.1. Observation Methods
    - 1.8.1.1. By the Type of Observable
      - 1.8.1.1.1. Code Observable/Pseudo Distances
      - 1.8.1.1.2. Phase Observable
    - 1.8.1.2. According to Receptor Action
      - 1.8.1.2.1. Static
      - 1.8.1.2.2. Kinematic
    - 1.8.1.3. According to Moment in Which the Calculation is Done
      - 1.8.1.3.1. Post-Process
      - 1.8.1.3.2. Real Time
    - 1.8.1.4. According to the Type of Solution
      - 1.8.1.4.1. Absolute
      - 1.8.1.4.2. Relative/ Difference
    - 1.8.1.5. According to Time of Observation
      - 1.8.1.5.1. Static
      - 1.8.1.5.2. Static-Rapid
      - 1.8.1.5.3. Kinematic
      - 1.8.1.5.4. RTK Kinematic
  - 1.8.2. Precise Point Positioning PPP
    - 1.8.2.1. Principles
    - 1.8.2.2. Advantages and Disadvantages
    - 1.8.2.3. Errors and Corrections
  - 1.8.3. Differential GNSS
    - 1.8.3.1. Kinematics in RTK Real Time
    - 1.8.3.2. NTRIP Protocol
    - 1.8.3.3. NMEA Standard
  - 1.8.4. Types of Receptors

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.*





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

This **Postgraduate Certificate in Geopositioning** 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 Geopositioning**

Official N° of hours: **150 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.





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

# Postgraduate Certificate Geopositioning