

# Postgraduate Diploma Expert Topography



## Postgraduate Diploma Expert Topography

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

Website: [www.techtitute.com/us/engineering/postgraduate-diploma/postgraduate-diploma-expert-topography](http://www.techtitute.com/us/engineering/postgraduate-diploma/postgraduate-diploma-expert-topography)

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# 01

# Introduction

Geomatics is a constantly evolving discipline. The number of its applications is increasing, and its experts are highly valued. This has led to the emergence of new professional profiles in this field, one of the most important of which is that of the topographic surveyor. This specialist is in charge of, among other things, verifying cadastral data or evaluating deeds. And this program is committed to respond to the current challenges in this area, providing surveyors with the best tools to be able to perform in this new job with all the guarantees.



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*This qualification will enable you to work as an expert surveyor with total confidence thanks to the work tools it will provide you with”*

Of the new professional profiles that have emerged in the field of surveying, the surveyor is one of the most in demand today. In just a few years it has grown significantly and has undergone numerous advances to meet the continuous challenges that have arisen as it has expanded. For this reason, this Postgraduate Diploma has been created to provide professionals with the best tools with which to manage in this field.

Therefore, this program delves into aspects such as geodesy, cartographic projections, UTM projection, UTM coordinate system, satellite positioning, cadastral valuation, LIDAR technology, urban planning legislation, point cloud editing and application of results, photogrammetry and LIDAR techniques, 3D scanning and georeferencing, among others.

This program follows an innovative 100% online teaching methodology specially designed for working professionals, since it adapts to their personal circumstances, without interfering with their work. In addition, an elite teaching staff in this area will guide you through the learning process, supported by numerous multimedia teaching resources.

This **Postgraduate Diploma in Expert Topography** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ Practical cases presented by experts in Expert Topography and Geomatics
- ◆ 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
- ◆ 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



*Explore expert topography, the most innovative professional profile in this field, thanks to this Postgraduate Diploma”*

“*TECH’s teaching methodology allows you to choose when and where to study. This is the opportunity you were looking for”*

The teaching staff of this program includes professionals from the industry, who contribute the experience of their work to this program, in addition to recognized specialists from reference societies and prestigious universities.

Thanks to multimedia content developed with the latest educational technology, you will be immersed in situated and contextual learning. In other words, a simulated environment that will provide immersive learning, programmed to train for 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.

*Expert Topography, studied in depth thanks to this educational program. Don't wait any longer and enroll.*

*Effectively face the current challenges of geomatics by deepening your knowledge in Expert Topography.*



# 02 Objectives

The main objective of this Postgraduate Diploma in Expert Topography is to bring the professional closer to the latest developments in this specific area of geomatics, so that they can work in it with total confidence, accessing, in passing, numerous professional opportunities thanks to the growing demand for topographic experts. To achieve this, this program provides a first-class teaching staff, up-to-date content and a flexible and totally effective teaching methodology.







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*Achieve your objective of progressing professionally in the field of Expert Topography thanks to this Postgraduate Diploma”*



## General Objectives

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- ◆ Plan, structure and develop expert reports
- ◆ Gather knowledge from different disciplines of topography and focus them towards the expert environment
- ◆ Determine expert topography as a branch of Geomatics
- ◆ Analyze the particularities of the cadaster in depth in order to identify the current characteristics that define/compose it
- ◆ Present the range of possibilities of the cadaster's service through the land registry
- ◆ 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
- ◆ Compile LIDAR applications applied to Geomatics and future possibilities
- ◆ Examine the practical application of LIDAR by 3D laser scanning as applied to topography





## Specific Objectives

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### Module 1. Expert Topography

- ◆ Analyze the elements of property-oriented surveying
- ◆ Develop the concept of expert evidence
- ◆ Determine the structure of an expert report
- ◆ Establish the requirements for being an expert
- ◆ Analyze the performance mode of an expert witness
- ◆ Identify the different actors in an expert procedure

### Module 2. Cadaster and Urban Planning

- ◆ Evaluate the cadastral information system in the network
- ◆ Analyze cadastral mapping services and their different download formats
- ◆ Develop the fundamentals of cadastral value / valuation and land registry
- ◆ Identify the notions of urban and land planning, as well as the laws that regulate them
- ◆ Determine the basis for urban planning
- ◆ Examine urban planning on the Internet

### Module 3. Mapping with LIDAR Technology

- ◆ Analyze LIDAR technology and its multiple applications in today's technology
- ◆ Specify the importance of LIDAR technology in geomatics applications
- ◆ Classify the different LIDAR mapping systems and their applications
- ◆ Define the use of 3D laser scanning as part of LIDAR technologies
- ◆ Propose the use of the 3D laser scanner for topographic surveys
- ◆ Demonstrate the advantages of the massive Geoinformation acquisition system using 3D laser scanning, as opposed to traditional topographic surveys
- ◆ Detail a clear and practical methodology of 3D laser scanning from the planning to a reliable delivery of results
- ◆ Examine, by means of real case studies, the use of 3D laser scanners in various sectors: mining, construction, civil engineering, deformation control or earthworks
- ◆ Recapitulate the impact of LIDAR technologies on current and future surveying



*The most specialized program in  
Expert Topography is here"*

03

# Course Management

To offer a better learning experience, this Postgraduate Diploma in Expert Topography has a first-class teaching staff made up of active professionals who have perfect knowledge of the latest innovations in this field of work. In this way, the student will have the most up-to-date knowledge, obtained from the professional practice of the professors. And they will be able to apply them immediately in their own career, as the transfer of skills will be totally direct.



“

*Apply the most up-to-date knowledge  
to your professional practice, taught by  
specialist lecturers in expert topography”*

## 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 cadaster of the province of Murcia (Spain). Geoinformation and Systems S.L
- ◆ 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 automization in Python Milcom
- ◆ Development of applications in .Net environment. SQL Server management Own software support Ecomputer

## Professors

### Mr. Encinas Pérez, Daniel

- ◆ Enusa Advanced Industries Environmental Center Head of the Technical and Topographical Office
- ◆ Ortigosa dismantling and excavations Head of Projects and Topography
- ◆ Epsa Internacional. Head of Production and Topography
- ◆ Palazuelos de Eresma Town Hall Topographic survey for Administration for the Mojón Partial Plan
- ◆ Degree in Engineering in Geomatics and Topography from the University of Salamanca

- ◆ Master's Degree in Cartographic Geotechnologies applied to Engineering and Architecture from the University of Salamanca (in progress)
- ◆ Higher Technician in Development of Urban Planning Projects and Topographic Operations
- ◆ RPAS Professional Pilot (Issued by Aerocámaras - AESA)

### 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



#### **Mr. Ramo Maicas, Tomás**

- ◆ Administrator for the Revolotear company Technical director for the development of the use of drones and laser scanners to obtain topography through the handling and filtering of point clouds, meshes and textures applied to mining, construction, architecture and heritage
- ◆ Head of Topography at the Revolotear business Company dedicated mainly to photogrammetric surveys with drone Volumetric control of mining fronts and cubing of stockpiles, for the main mining companies
- ◆ Chief of Topography in Senegal for the company MOPSA (Marco Group in Senegal). Project design, volume study of materials, edition of plans, field and office topography, for the works of adaptation of the Pakh dam and CSS, in Guiers lake and adaptation of the Neti Yone canal
- ◆ Logistics implementation work for the company Blauverd, Korman, in Algeria Site manager and responsible for topography on several building sites, mainly in Algiers, Constantine and Oran
- ◆ Technical Engineer in Topography from the School of Geodesy, Cartography and Topography Engineering of the Polytechnic University of Valencia
- ◆ Technical Engineer in Topography from the School of Geodesy, Cartography and Topography Engineering of the Polytechnic University of Valencia
- ◆ Drone Pilot (RPAS), by FLYSCHOOL AIR ACADEMY aeronautical training center

# 04

# Structure and Content

The contents of this Postgraduate Diploma in Expert Topography are structured into 3 specialized modules through which the professional will learn about the latest advances in orthometrics, geopositioning, photogrammetry and LIDAR techniques, the digital elevation model, the Cadaster and its legislation, cadastral cartography, property-oriented topography, topographic surveys by 3D laser scanner or geometric extraction, among many others.





“

*In this Postgraduate Diploma you will find  
the best content on Expert Topography”*

## Module 1. Expert Topography

- 1.1. Classic Topography
  - 1.1.1. Total Station
    - 1.1.1.1. Stationing
    - 1.1.1.2. Automatic Monitoring Total Station
    - 1.1.1.3. Measurement without a Prism
  - 1.1.2. Coordinate Transformation
  - 1.1.3. Topographic Methods
    - 1.1.3.1. Free Stationing
    - 1.1.3.2. Measuring Distance
    - 1.1.3.3. Stakeout
    - 1.1.3.4. Area Calculation
    - 1.1.3.5. Remote Height
- 1.2. Cartography
  - 1.2.1. Cartographic Projections
  - 1.2.2. UTM Projection
  - 1.2.3. System of UTM Coordinates
- 1.3. Geodesy
  - 1.3.1. Geoid and Ellipsoid
  - 1.3.2. The Datum
  - 1.3.3. System of Coordinates
  - 1.3.4. Types of Elevations
    - 1.3.4.1. Height of the Geoid
    - 1.3.4.2. Ellipsoid
    - 1.3.4.3. Orthometric
  - 1.3.5. Geodetic Reference Systems
  - 1.3.6. Leveling Networks
- 1.4. Geopositioning
  - 1.4.1. Satellite Positioning
  - 1.4.2. Errors
  - 1.4.3. GPS
  - 1.4.4. GLONAS
  - 1.4.5. Galileo
  - 1.4.6. Positioning Methods
    - 1.4.6.1. Static
    - 1.4.6.2. Static-Rapid
    - 1.4.6.3. RTK
    - 1.4.6.4. Real Time
- 1.5. Photogrammetry and LIDAR Techniques
  - 1.5.1. Photogrammetry
  - 1.5.2. Digital Elevation Model
  - 1.5.3. LIDAR
- 1.6. Property-Oriented Topography
  - 1.6.1. Measuring Systems
  - 1.6.2. Boundaries
    - 1.6.2.1. Types
    - 1.6.2.2. Regulation
    - 1.6.2.3. Administrative Boundaries
  - 1.6.3. Easements
  - 1.6.4. Segregation, Division, Grouping and Aggregation
- 1.7. Property Registration
  - 1.7.1. Cadaster
  - 1.7.2. Property Registration
    - 1.7.2.1. Organization
    - 1.7.2.2. Registration Discrepancies
  - 1.7.3. Notary

- 1.8. Expert Test
  - 1.8.1. Expert Evidence
  - 1.8.2. Requirements for Being an Expert
  - 1.8.3. Types
  - 1.8.4. Expert Role
  - 1.8.5. Property Delimitation Tests
- 1.9. Expert Report
  - 1.9.1. Steps Before the Report
  - 1.9.2. People Involved in the Expert Procedure
    - 1.9.2.1. Judge-Magistrate
    - 1.9.2.2. Judicial Secretary
    - 1.9.2.3. Procurators
    - 1.9.2.4. Lawyers
    - 1.9.2.5. Plaintiff and Defendant
  - 1.9.3. Parts of the Expert Report

## Module 2. Cadaster and Urban Planning

- 2.1. Cadaster
  - 2.1.1. Cadaster
- 2.2. The Real Estate Cadaster
  - 2.2.1. The Real Estate Cadaster
  - 2.2.2. Cadastral Mapping
  - 2.2.3. Cadastral Reference
  - 2.2.4. Descriptive and Graphic Cadastral Certification
- 2.3. Presence of the Cadaster on the Internet
  - 2.3.1. Cadastral Mapping
  - 2.3.2. Format of the Gml Inspire Download
    - 2.3.2.1. WMS Service to Visualize Maps
    - 2.3.2.2. WFS Download Service
    - 2.3.2.3. Atom Download Service
  - 2.3.3. Cadastral Mapping: Shapefile Format
  - 2.3.4. Cadastral Mapping: Cat Format
  - 2.3.5. Other Formats

- 2.4. Cadastral Valuation
  - 2.4.1. Cadastral Value
  - 2.4.2. Urban Cadastral Valuation
  - 2.4.3. Rustic Cadastral Valuation
  - 2.4.4. Ground Valuation
- 2.5. Property Registry and Notary's Office
  - 2.5.1. Simple Note and Certification
  - 2.5.2. Registration and Cadastral Reference
  - 2.5.3. Notary
  - 2.5.4. The Expert Geometer
- 2.6. The Real Estate Cadaster Coordination. Property Registration
  - 2.6.1. Cadaster and Registration
  - 2.6.2. Registered Property and Cadastral Parcel
  - 2.6.3. Cadaster Coordination. Records
  - 2.6.4. Graphic Coordination
- 2.7. Urban and Regional Planning
  - 2.8.1. Urban and Regional Planning
  - 2.8.2. Planning Instruments
  - 2.8.3. Urban Planning Instruments
- 2.9. Presence of Urban Planning on the Internet
  - 2.9.1. Urban Planning and Urban Sustainability
  - 2.9.2. Urban Information Systems
  - 2.9.3. SIU Map Viewer
  - 2.9.4. Urban Planning
  - 2.9.5. Network Urban Planning

### Module 3. Mapping with LIDAR Technology

- 3.1. LIDAR Technology
  - 3.1.1. LIDAR Technology
  - 3.1.2. Functioning of the System
  - 3.1.3. Principal Components
- 3.2. LIDAR Applications
  - 3.2.1. Applications
  - 3.2.2. Classification
  - 3.2.3. Current Implementation
- 3.3. LIDAR Applied to Geomatics
  - 3.3.1. Mobile Mapping System
  - 3.3.2. Airborne LIDAR
  - 3.3.3. Ground-Based LIDAR. Backpack and Static Scanning
- 3.4. Topographic Surveys by 3D Laser Scanner
  - 3.4.1. Operation of 3D Laser Scanning for Topography
  - 3.4.2. Error Analysis
  - 3.4.3. General Survey Methodology
  - 3.4.4. Applications
- 3.5. 3D Laser Scanner Survey Planning
  - 3.5.1. Objectives to Scan
  - 3.5.2. Positioning and Georeferencing Planning
  - 3.5.3. Catch Density Planning
- 3.6. 3D Scanning and Georeference
  - 3.6.1. Scanner Configuration
  - 3.6.2. Acquisition of Data
  - 3.6.3. Target Reading: Georeferencing
- 3.7. Initial Management of Geoinformation
  - 3.7.1. Geoinformation Download
  - 3.7.2. Point Cloud
  - 3.7.3. Georeferencing and Export of Point Clouds



- 3.8. Point Cloud Editing and Application of Results
  - 3.8.1. Processing Point Clouds. Cleaning, Resampling or Simplification
  - 3.8.2. Geometric Extraction
  - 3.8.3. 3D Modelling. Mesh Generation and Texture Application
  - 3.8.4. Analysis. Transversal Sections and Measurements
- 3.9. Surveys by 3D Laser Scanner
  - 3.9.1. Planning: Precision and Instruments to Use
  - 3.9.2. Fieldwork: Scanning and Georeferencing
  - 3.9.3. Download Processing, Editing and Delivery
- 3.10. Repercussion of LIDAR Technologies
  - 3.10.1. General Repercussion of LIDAR Technologies
  - 3.10.2. Particular Impact of the 3D Scanner in Topography

“ Add expert topography to your professional profile and advance your career quickly”



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

This Postgraduate Diploma in Expert Topography guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma 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 Diploma in Expert Topography** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Diploma**, issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Expert Topography**

Official N° of Hours: **450 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 language  
virtual classroom



## Postgraduate Diploma Expert Topography

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

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