

# Postgraduate Certificate Mapping and LIDAR Technology





## Postgraduate Certificate Mapping and LIDAR Technology

- » 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/mapping-lidar-technology](http://www.techtitute.com/us/engineering/postgraduate-certificate/mapping-lidar-technology)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

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*p. 20*

06

Certificate

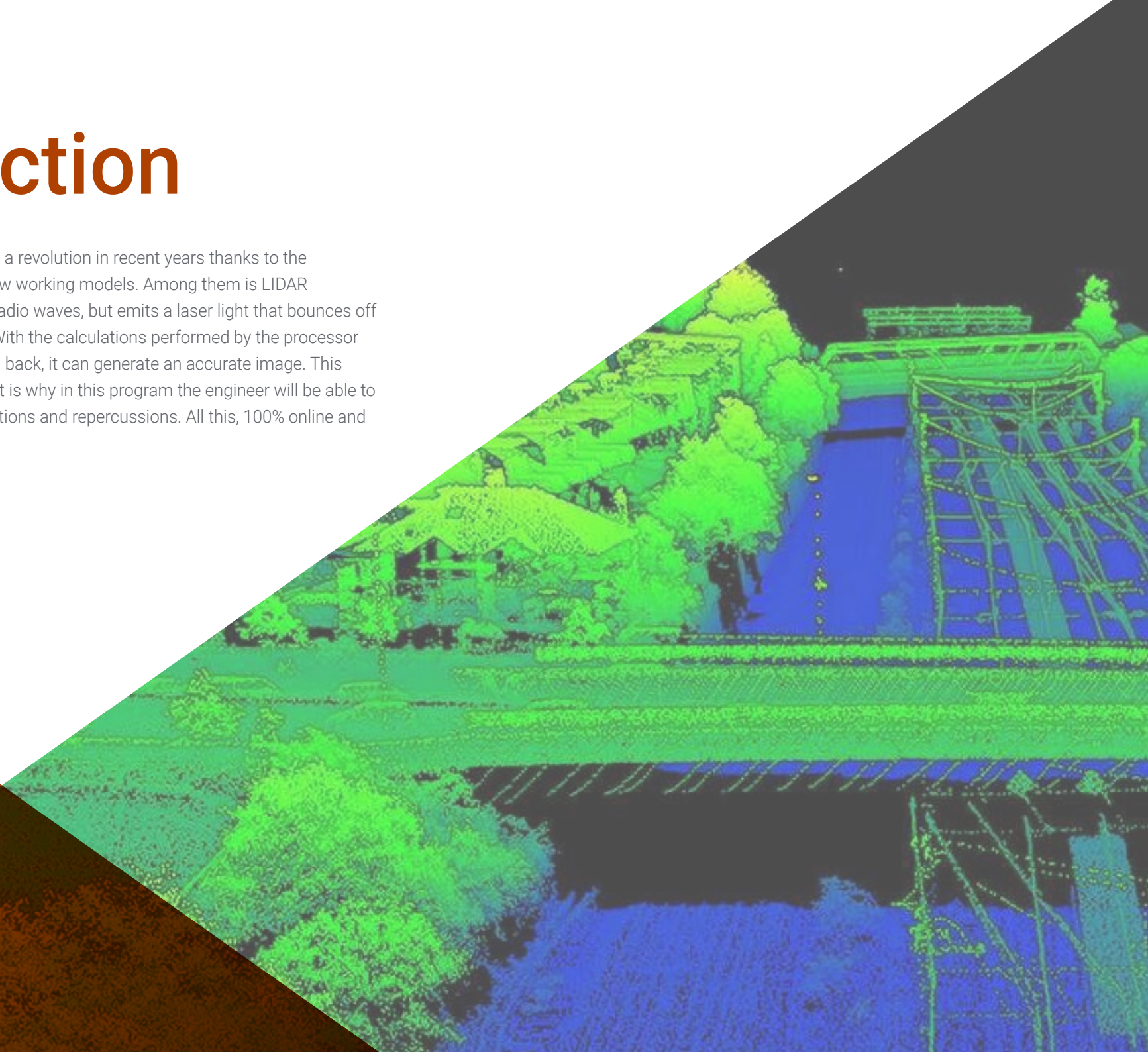
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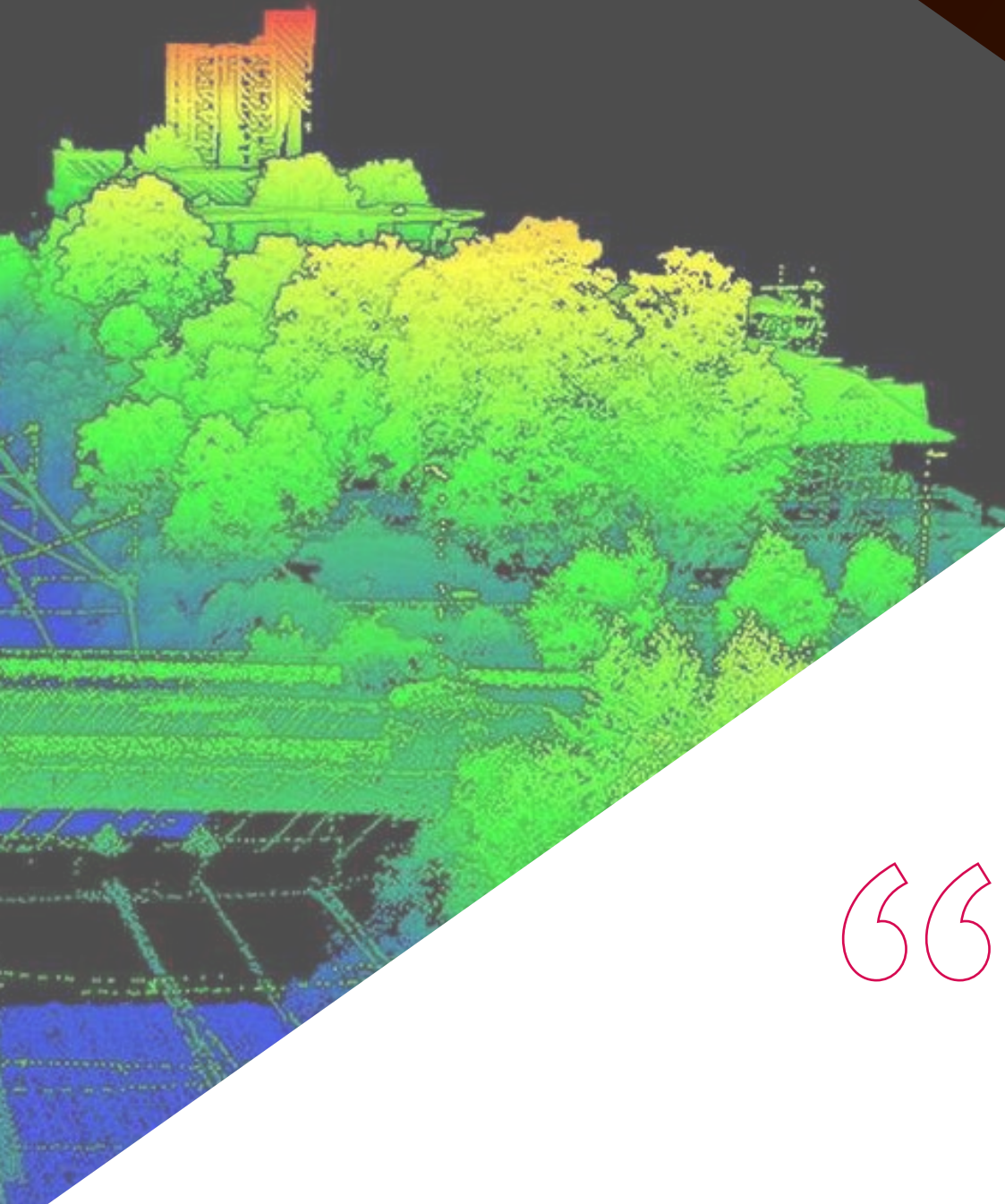
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# 01

# Introduction

Traditional mapping has undergone a revolution in recent years thanks to the emergence and consolidation of new working models. Among them is LIDAR technology, which is not based on radio waves, but emits a laser light that bounces off objects and returns to the source. With the calculations performed by the processor upon receiving that solid light beam back, it can generate an accurate image. This technology has many uses, and that is why in this program the engineer will be able to know in depth its operation, applications and repercussions. All this, 100% online and in only 6 weeks.





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*LIDAR technology has many uses. Learn about them thanks to this TECH Postgraduate Certificate”*

This Postgraduate Certificate in Mapping and LIDAR Technology examines the impact of LIDAR technology on mapping, particularly on the use of the 3D laser scanner for the mass acquisition of geoinformation and its use for carrying out highly accurate and detailed topographic surveys.

It also analyzes the different applications of LIDAR technology in the field of geomatics. It looks at the different types of errors to be compensated in order to ensure that the data obtained have the necessary precision to be applied in the different projects that can be undertaken with this technology.

Thanks to this knowledge, the engineer will be able to participate in projects that include this technology as a mapping method and will be able to generate reliable images based on the laser light bouncing off the object. All this, 100% online, in only 6 weeks of intensive learning and with the latest educational technology.

The **Postgraduate Certificate in Mapping and LIDAR Technology** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ Practical cases presented by experts in Cartography
- ◆ 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



*TECH uses the latest educational technology in its programs in order to offer you a much more precise and efficient learning”*

“ *TECH provides you with a simple yet truly useful way of studying where you are the one who chooses when and where to study. We offer you the best content and access to a first-class teaching staff*”

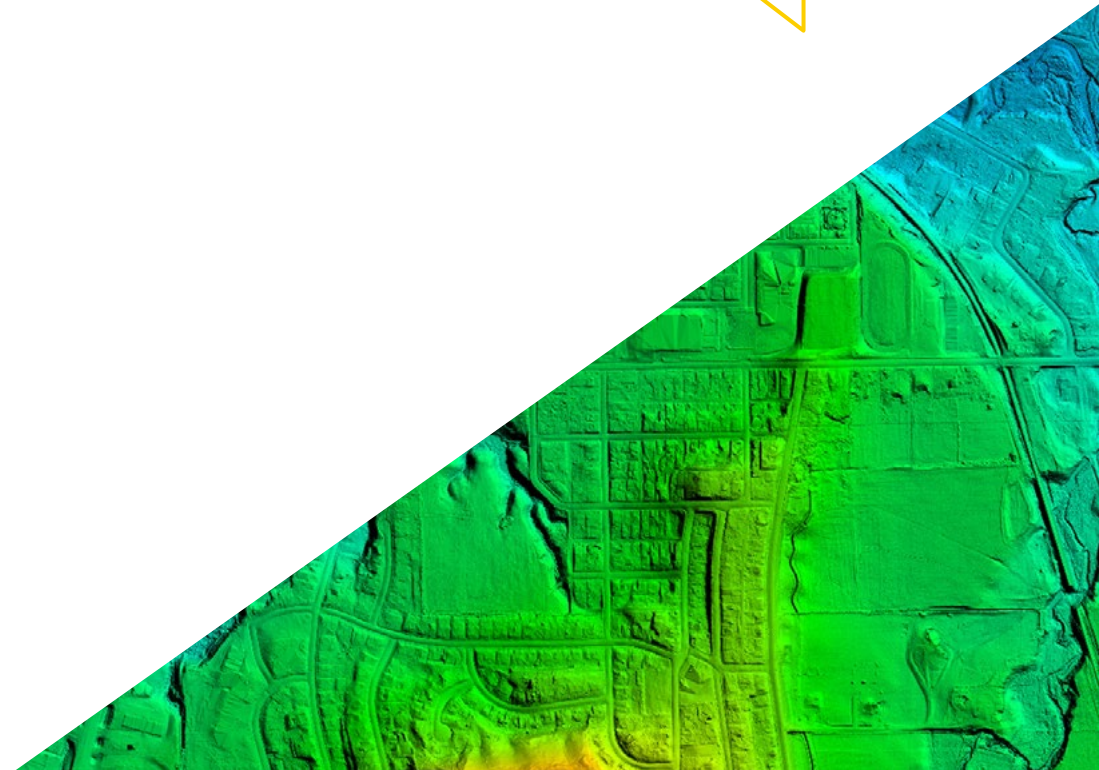
*Know the foundations, the system and the methodology of LIDAR technology thanks to this Postgraduate Certificate.*

*The range of uses of LIDAR technology is so vast that new professional profiles are constantly emerging in this area.*

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.



# 02

# Objectives

After finishing this Postgraduate Certificate, the engineer will have new skills which will take them closer to developing activities and projects in the mapping sector, specifically using LIDAR technology. This will allow them to be up to date on the latest developments of the sector, being able to fulfil their professional objectives in a faster and more efficient way.







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*By studying with TECH, you are one step closer to achieving your goals. Enroll now and check it out”*



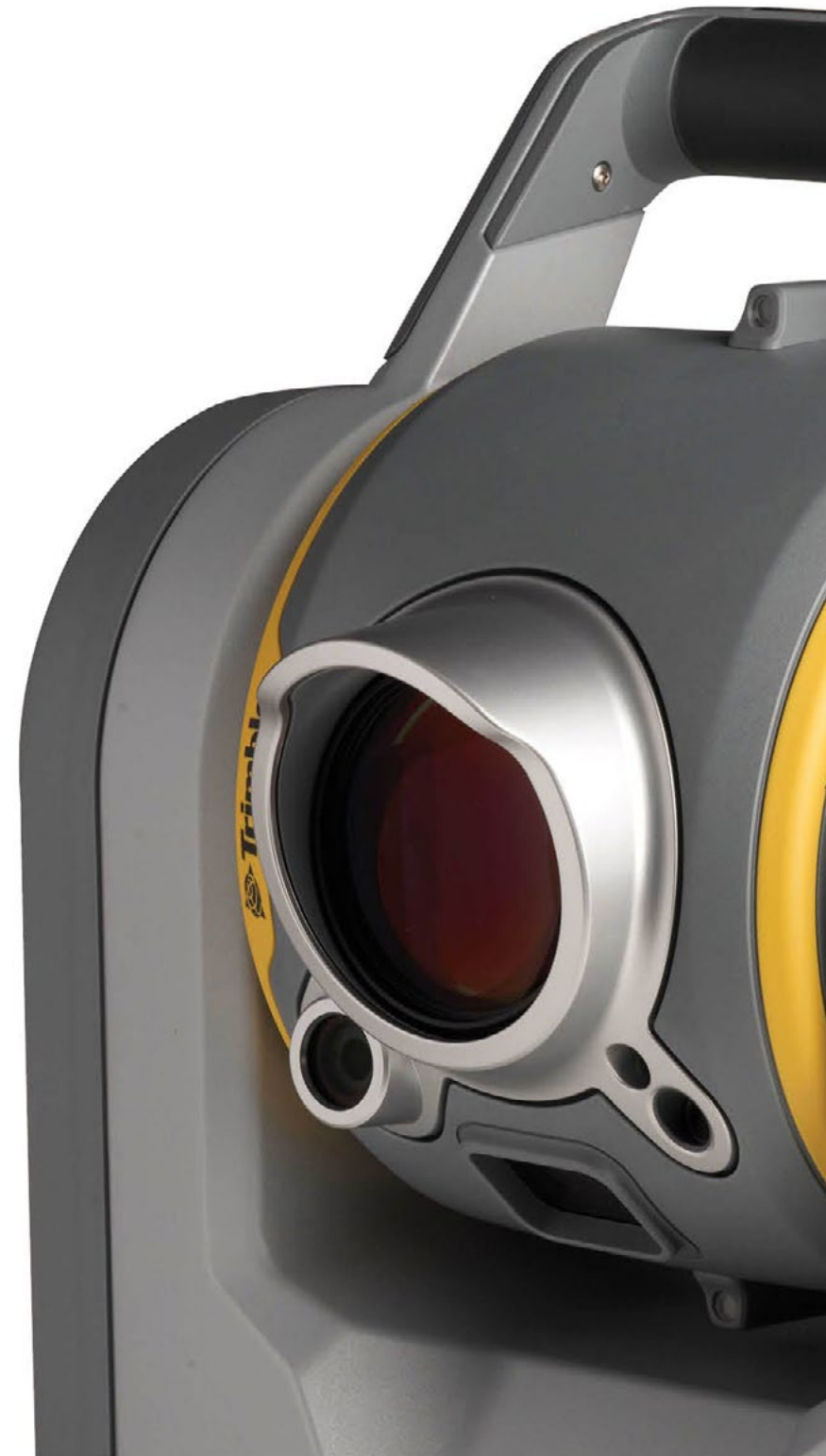
## General Objectives

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- ◆ 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
- ◆ Evaluate the different database engines and their benefits

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*TECH uses the Relearning methodology in all its programs. Its proven effectiveness will help you to learn in a faster and more contextual way”*





## Specific Objectives

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- ◆ 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

03

# Course Management

This Postgraduate Certificate in Mapping and LIDAR Technology has a first-class teaching staff that will provide students with all the latest developments in this field. Therefore, the professional who completes this program will master all kinds of technological and computer tools that will allow them to improve the efficiency of their daily work and access to numerous mapping projects which use LIDAR technology.





“

*High level professionals will help you to learn in depth the functioning of LIDAR technology”*

## 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 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 automatization in Python Milcom
- ♦ Development of applications in .Net environment. SQL Server management Own software support Ecomputer



## Professors

### 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 syllabus of this Postgraduate Certificate has been designed to be delivered in only six weeks of intensive learning. Through this, the engineer will be able to learn the main components, the functioning, applications and classification of the LIDAR system. Thanks to this complete and efficient contextualization, the professional will be able to lead projects that use this technology, contributing a unique and highly effective vision to the project.





“

*The most up-to-date and in-depth syllabus in the field of mapping is here. Don't miss this opportunity and enroll now”*

## Module 1. Mapping with LIDAR Technology

- 1.1. LIDAR Technology
  - 1.1.1. Functioning of the System
  - 1.1.2. Principal Components
- 1.2. LIDAR Applications
  - 1.2.1. Applications
  - 1.2.2. Classification
  - 1.2.3. Current Implementation
- 1.3. LIDAR Applied to Geomatics
  - 1.3.1. Mobile Mapping System
  - 1.3.2. Airborne LIDAR
  - 1.3.3. Ground-Based LIDAR. Backpack and Static Scanning
- 1.4. Topographic Surveys by 3D Laser Scanner
  - 1.4.1. Operation of 3D Laser Scanning for Topography
  - 1.4.2. Error Analysis
  - 1.4.3. General Survey Methodology
  - 1.4.4. Applications
- 1.5. 3D Laser Scanner Survey Planning
  - 1.5.1. Objectives to Scan
  - 1.5.2. Positioning and Georeferencing Planning
  - 1.5.3. Catch Density Planning
- 1.6. 3D Scanning and Georeference
  - 1.6.1. Scanner Configuration
  - 1.6.2. Acquisition of Data
  - 1.6.3. Target Reading: Georeferencing



- 1.7. Initial Management of Geoinformation
  - 1.7.1. Geoinformation Download
  - 1.7.2. Point Cloud
  - 1.7.3. Georeferencing and Export of Point Clouds
- 1.8. Point Cloud Editing and Application of Results
  - 1.8.1. Processing Point Clouds. Cleaning, Resampling or Simplification
  - 1.8.2. Geometric Extraction
  - 1.8.3. 3D Modelling. Mesh Generation and Texture Application
  - 1.8.4. Analysis. Transversal Sections and Measurements
- 1.9. Surveys by 3D Laser Scanner
  - 1.9.1. Planning: Precision and Instruments to Use
  - 1.9.2. Fieldwork: Scanning and Georeferencing
  - 1.9.3. Download Processing, Editing and Delivery
- 1.10. Repercussion of LIDAR Technologies
  - 1.10.2. General Repercussion of LIDAR Technologies
  - 1.10.3. Particular Impact of the 3D Scanner in Topography



*You are just one step away from achieving your goals. By enrolling in this Postgraduate Certificate, you will be able to achieve all of them”*

05

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





“

*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

“

*At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world”*



*You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.*



*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

### **A learning method that is different and innovative**

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

**“** *Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

The case method is the most widely used learning system in the best faculties in the world. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

## Relearning Methodology

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

We enhance the Case Study with the best 100% online teaching method: Relearning.

*In 2019, we obtained the best learning results of all online universities in the world.*

At TECH, you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.





In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

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



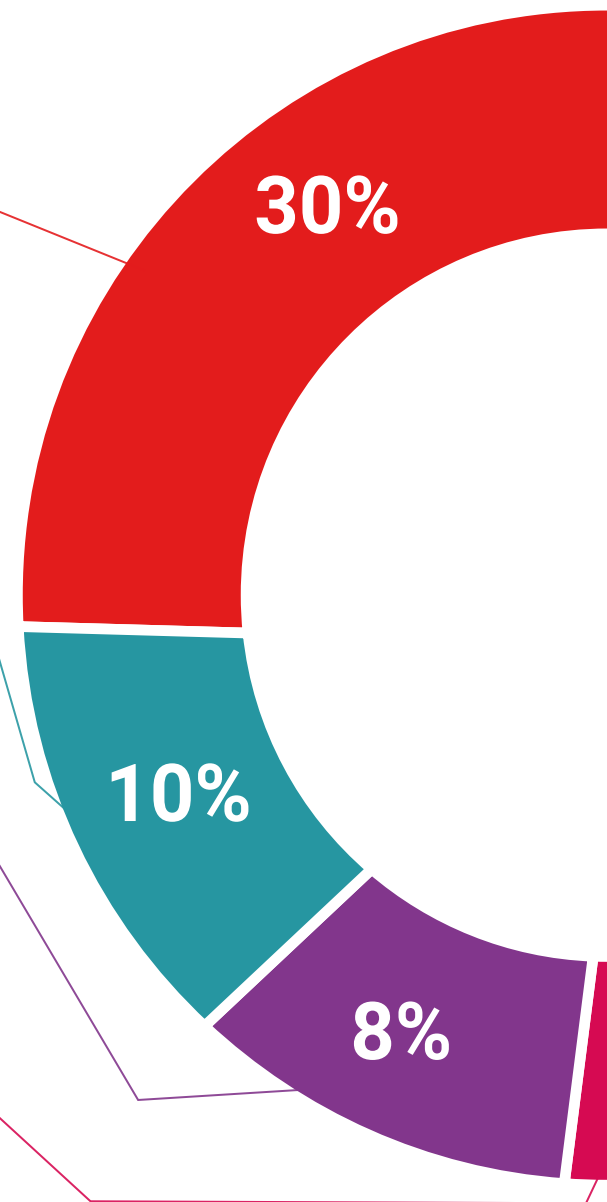
### Practising Skills and Abilities

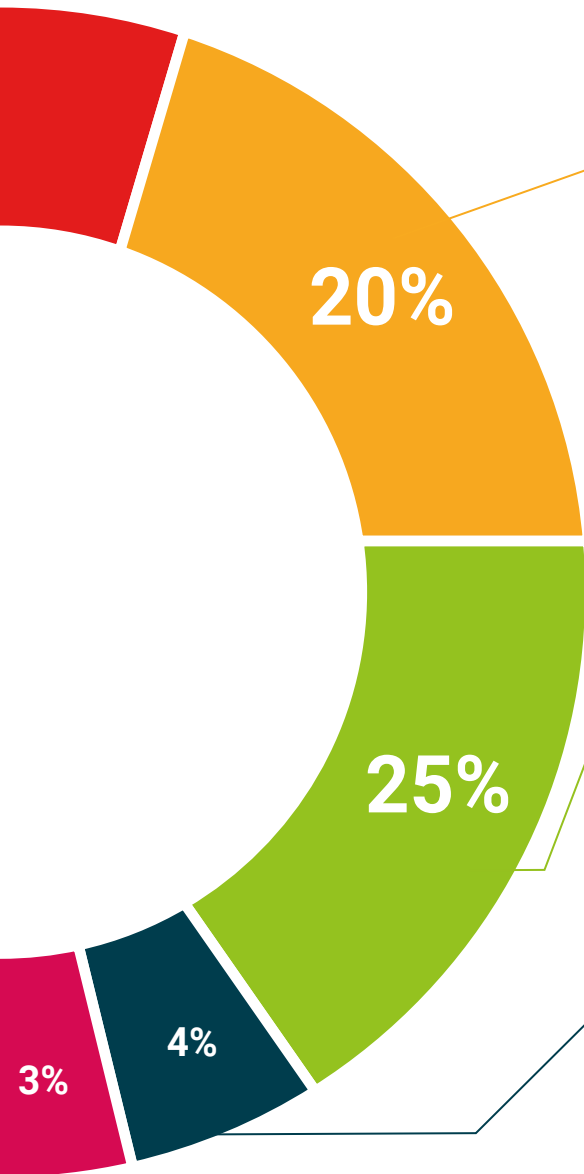
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





#### Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



06

# Certificate

The Postgraduate Certificate in Mapping and LIDAR Technology 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”*

The **Postgraduate Certificate in Mapping and LIDAR Technology** 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** diploma 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 Mapping and LIDAR Technology**

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.



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