Postgraduate Certificate
Remote Sensing and Image Processing

tech *global university*

Postgraduate Certificate
Remote Sensing and Image Processing

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

Website: **www.techtitute.com/us/engineering/postgraduate-certificate/remote-sensing-image-processing**

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01
Introduction

The advance of new technologies together with the theoretical and practical knowledge of physics, which is behind remote sensing, has led to a much better understanding of the Earth today, both in real time and in its evolutionary process. This makes it possible to monitor changes in farmland, weather forecasting or the creation of remote sensors in engineering, which make it possible to determine the topography and orography of the planet. However, all this progress would not be possible without a thorough knowledge on the part of specialists, which is also provided by this program designed in a 100% online format. Thanks to its content, students will be able to acquire advanced learning about image processing, its applications, optimization, registration, as well as the most essential notions in machine learning. For this purpose, the most innovative teaching resources, developed by experts in the field, are available 24 hours a day.

This 100% online Postgraduate Certificate will allow you to obtain the physical knowledge about Remote Sensing and Image Processing to be applied in the field of Engineering"

The development of passive and active remote sensing in recent years has had a notorious impact on the greater knowledge of the current planet, on atmospheric conditions or on the development of equipment that, by means of imaging, allows for better medical diagnosis. Undoubtedly, scientific findings that will have a greater impact thanks to continuous studies and technological advances.

In this scenario of growth and development, the specialist can progress in the field of research or technical development, and thus contribute to sectors such as agriculture, maritime or technology itself. To this end, TECH provides students with intensive learning 100% online, where students will be able to acquire all the necessary concepts to master Remote Sensing and Image Processing.

A university education that is also characterized by making available to students the most updated content through innovative teaching resources. Thus, through video summaries, videos in detail, specialized readings or case studies, the graduates will be able to enter in a much more dynamic way in segmentation techniques and 3D and 4D processing, Big Data, Deep Learning or the software used in remote sensing.

The professionals have before them a university program that they can access comfortably, whenever and wherever they wish. All they need is a computer, tablet or cell phone with an Internet connection to delve into the syllabus hosted on the Virtual Campus at any time of the day. It is also an ideal option for those who are looking for a high level academic option compatible with the most demanding responsibilities.

This **Postgraduate Certificate in Remote Sensing and Image Processing** contains the most complete and up-to-date program on the market. The most important features include:

- Practical case studies are presented by experts in Physics
- 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
- 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

Enroll now in a 100% online university education, flexible and compatible with the most demanding responsibilities"

" *Delve into the latest 3D and 4D segmentation and processing techniques whenever you want, from your computer with Internet connection"*

With the Relearning system used by TECH you will no longer invest so many hours of study and memorization. Enroll now.

During 150 teaching hours you will get the necessary learning about the key concepts of passive and active remote sensing.

The program's teaching staff includes professionals from the sector who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will provide the professionals with situated and contextual learning, i.e., a simulated environment that will provide an immersive education 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 students will be assisted by an innovative interactive video system created by renowned experts.

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Objectives

The syllabus of this Postgraduate Certificate has been designed to offer students the most advanced knowledge on Remote Sensing and Image Processing. At the end of the 150 teaching hours, this learning will allow students to have the necessary skills to apply physical knowledge in different disciplines, the software used and the different instruments used for image observation.

Advance with this Postgraduate Certificate and deepen in passive remote sensing and the different instruments of gamma and X-ray observation"

General Objectives

- Acquire basic knowledge of medical and atmospheric image processing
- Understand the main software used in remote sensing

No attendance, no fixed schedules. This university program allows you to learn at your own pace the advances in machine learning"

Specific Objectives

- Apply learning in image processing in the fields of medical and atmospheric physics respectively
- Acquire skills in image optimization, registration and fusion
- Know the basics of *machine learning* and data analysis

Structure and Content

TECH offers students multimedia pills (video summaries, detailed videos, diagrams), which allow them to acquire the content offered in this program in a much more dynamic way. In addition, in order for the graduates to get the maximum performance, this academic institution uses the Relearning system, which will facilitate the assimilation of content in a progressive and simple way. In this way you will acquire a more solid and effective knowledge about Remote Sensing and Image Processing.
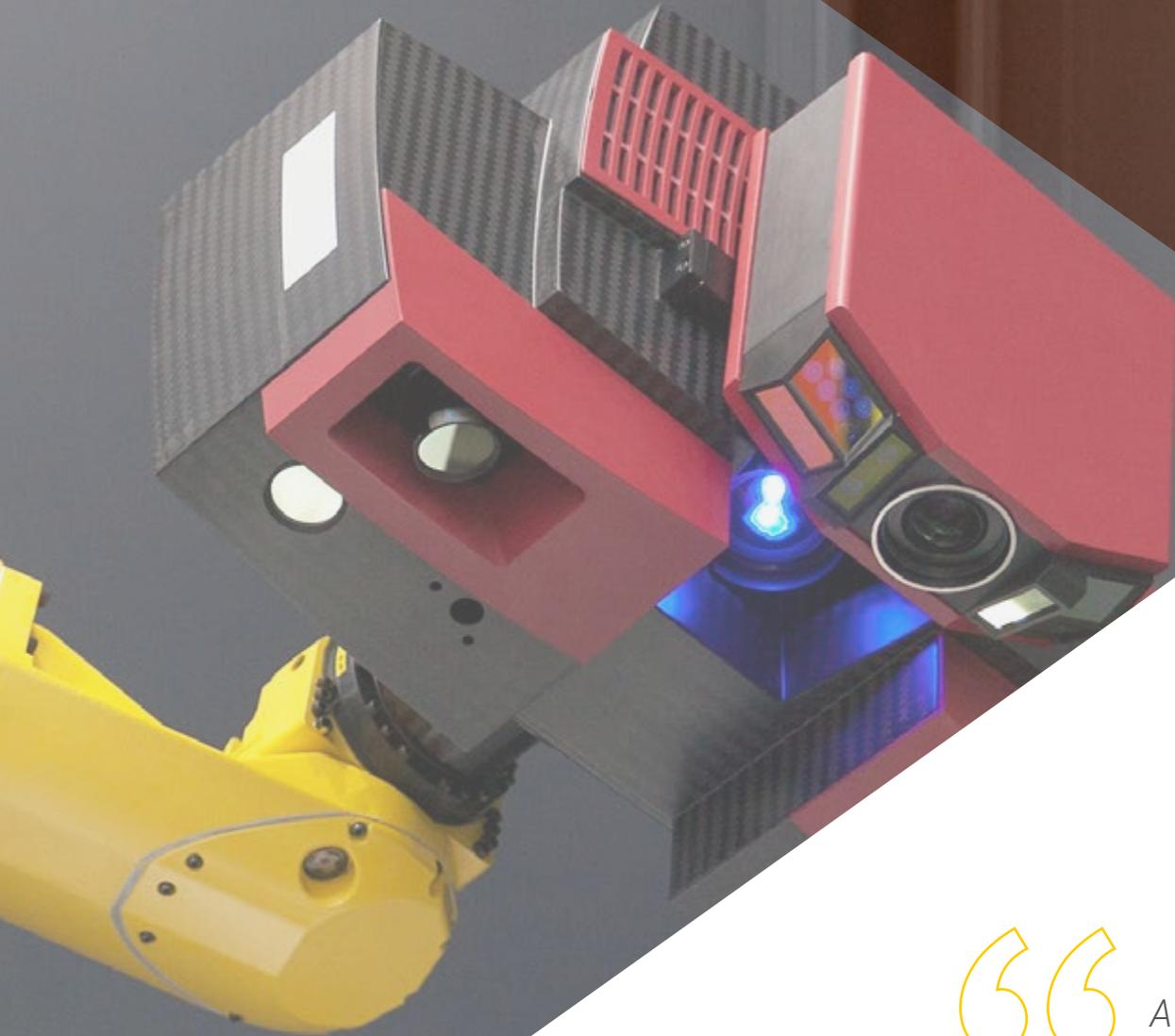
> *A study plan, where case studies will lead you to methodologies that you will be able to integrate in your professional performance in the field of Engineering"*

Module 1. Remote sensing and image processing

1.1.   Introduction to Image Processing
    1.1.1.   Motivation
    1.1.2.   Digital Medical and Atmospheric Imaging
    1.1.3.   Modalities of Medical and Atmospheric Imaging
    1.1.4.   Quality Parameters
    1.1.5.   Storage and Display
    1.1.6.   Processing Platforms
    1.1.7.   Image Processing Applications

1.2.   Image Optimization, Registration and Fusion
    1.2.1.   Introduction and Objectives
    1.2.2.   Intensity Transformations
    1.2.3.   Noise Correction
    1.2.4.   Filters in the Spatial Domain
    1.2.5.   Frequency Domain Filters
    1.2.6.   Introduction and Objectives
    1.2.7.   Geometric Transformations
    1.2.8.   Records
    1.2.9.   Multimodal Merging
    1.2.10.   Applications of Multimodal Fusion

1.3.   3D and 4D Segmentation and Processing Techniques
    1.3.1.   Introduction and Objectives
    1.3.2.   Segmentation Techniques
    1.3.3.   Morphological Operations
    1.3.4.   Introduction and Objectives
    1.3.5.   Morphological and Functional Imaging
    1.3.6.   3D Analysis
    1.3.7.   4D Analysis

1.4.   Feature Extraction
    1.4.1.   Introduction and Objectives
    1.4.2.   Texture Analysis
    1.4.3.   Morphometric Analysis
    1.4.4.   Statistics and Classification
    1.4.5.   Presentation of Results

1.5.   *Machine Learning*
    1.5.1.   Introduction and Objectives
    1.5.2.   Big Data
    1.5.3.   *Deep Learning*
    1.5.4.   Software Tools
    1.5.5.   Applications
    1.5.6.   Limitations

1.6.   Introduction to Remote Sensing
    1.6.1.   Introduction and Objectives
    1.6.2.   Definition of Remote Sensing
    1.6.3.   Exchange Particles in Remote Sensing
    1.6.4.   Active and Passive Remote Sensing
    1.6.5.   Remote Sensing Software with Python

1.7.   Passive Photon Remote Sensing
    1.7.1.   Introduction and Objectives
    1.7.2.   Light
    1.7.3.   Interaction of Light with Matter
    1.7.4.   Black Bodies
    1.7.5.   Other Effects
    1.7.6.   Point Cloud Diagram
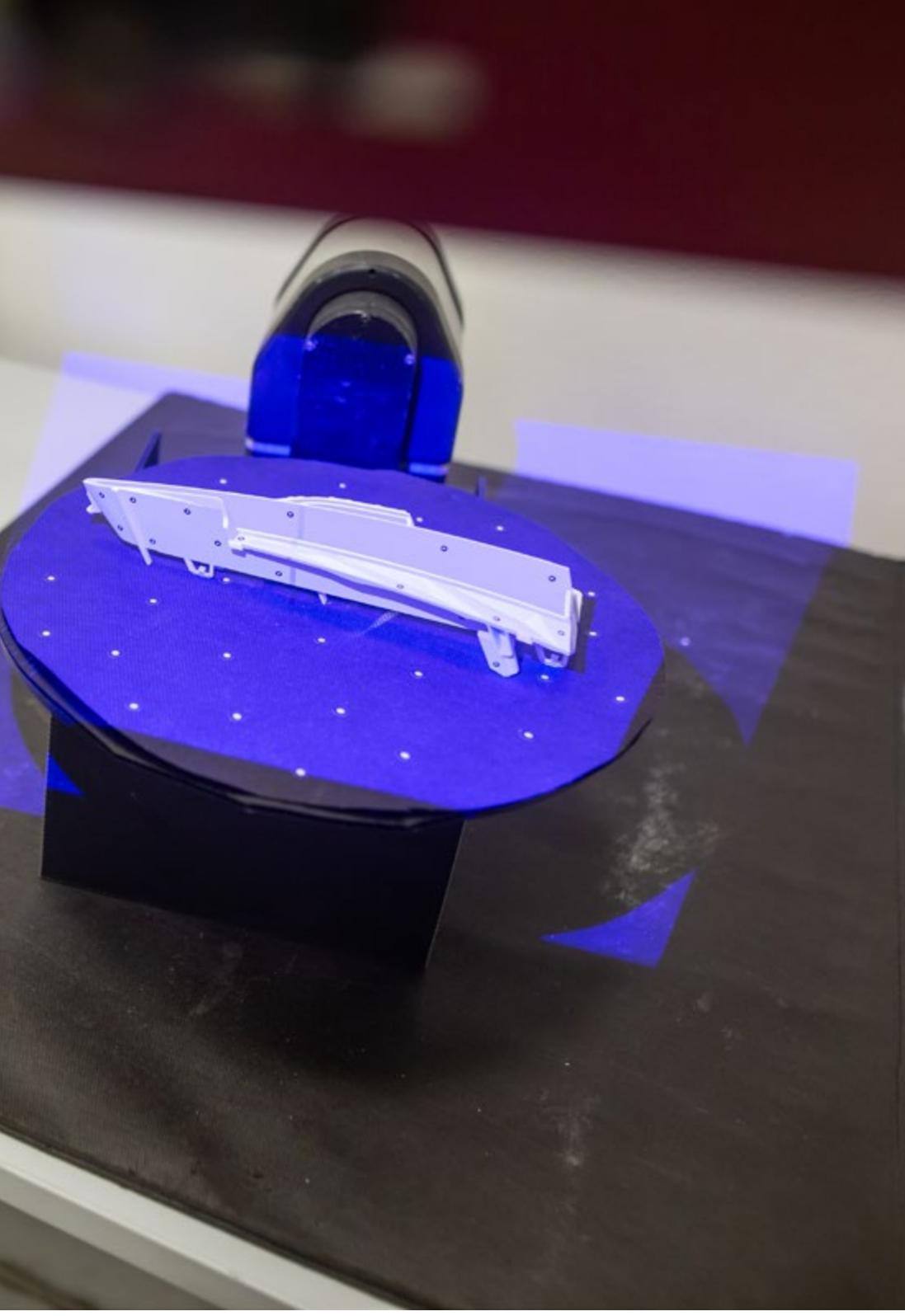
Immerse yourself with TECH in the advances made in active remote sensing with lidar and radar"

04
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.

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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.

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

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.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

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.

30%

10%

8%

20%

25%

4%

3%
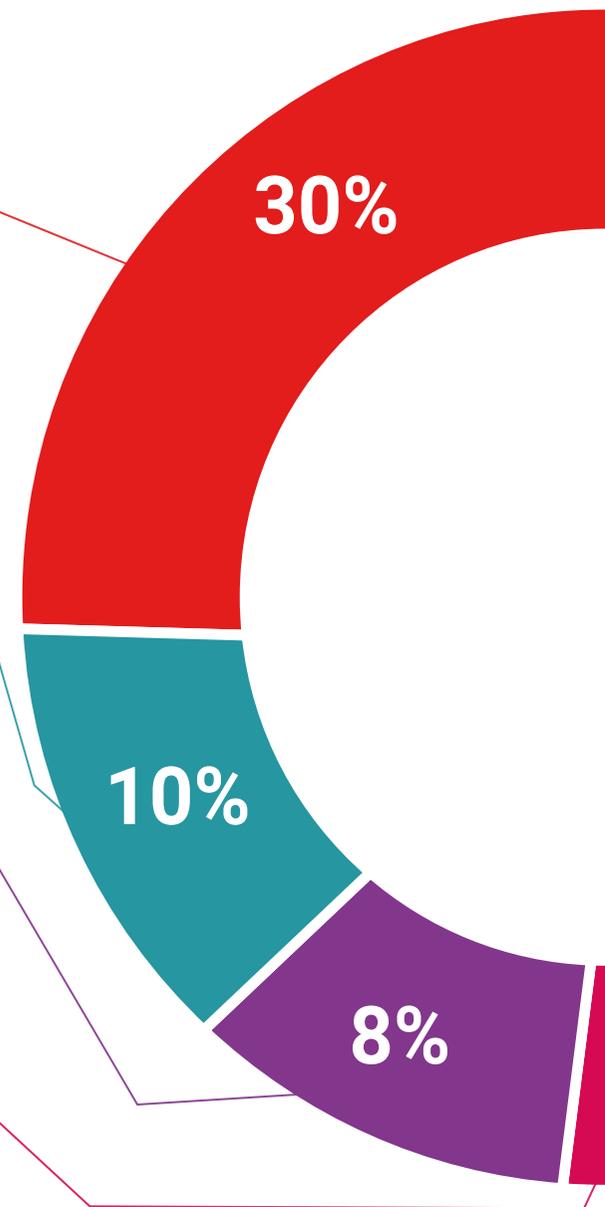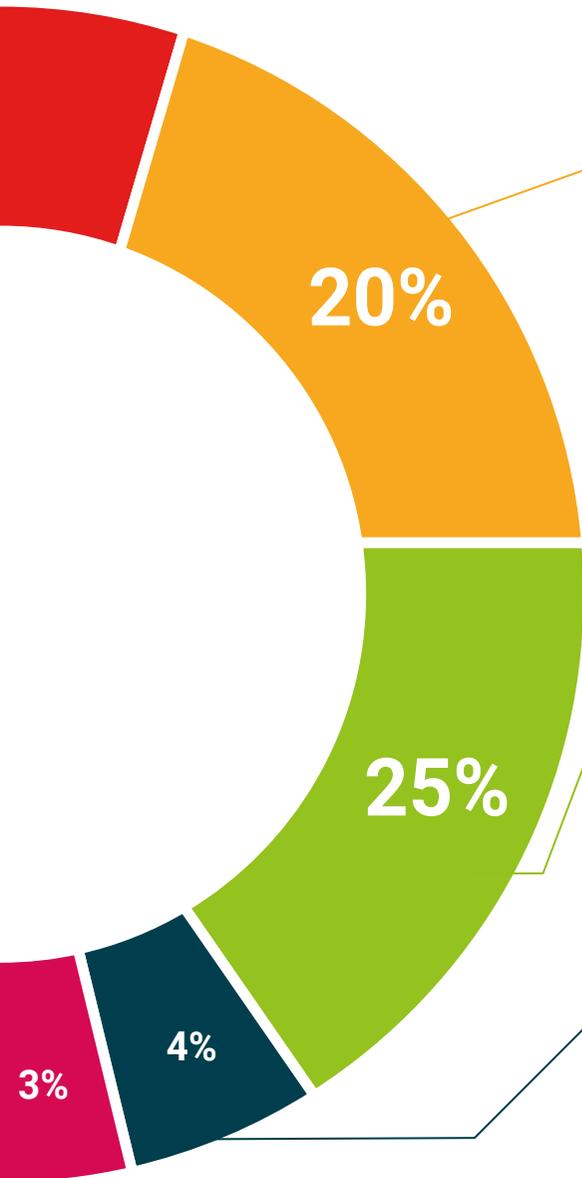
Case Studies

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.

Certificate

The Postgraduate Certificate in Remote Sensing and Image Processing guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

This program will allow you to obtain your **Postgraduate Certificate in Remote Sensing and Image Processing** endorsed by **TECH Global University**, the world's largest online university.

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

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

Title: **Postgraduate Certificate in Remote Sensing and Image Processing**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**

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Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Certificate in Remote Sensing and Image Processing

This is a program of 180 hours of duration equivalent to 6 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Rector

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country.   Unique TECH Code: AFWORD23S   techtitute.com/certificates

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

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