Postgraduate Certificate

Biomedical Image Capture and Analysis

tech global university

Postgraduate Certificate
Biomedical Image Capture and Analysis

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

Website: **www.techtitute.com/us/medicine/postgraduate-certificate/biomedical-image-capture-analysis**

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01

Introduction

Developments in the field of image capture and analysis have led to an evolution in the medical sector. It is now possible to detect many diseases early and treat them with better results, something that was impossible decades ago. Knowing these techniques and handling them skilfully is a matter of necessity for many specialists; hence the creation of this program. Through a complete online program, the graduate will have access to 180 hours of varied content, of the highest quality and developed based on the most modern and effective pedagogical methodology.

" This program will broaden your knowledge of biomedical imaging and boost your career"

Advances in imaging techniques and processes developed by biomedicine have enabled specialists in different medical fields to improve their diagnoses and treatments, thus benefiting millions of patients. As a result of this evolution, increasingly complex but sophisticated methods are being developed, with increasingly promising and accurate results.

If a specialist wants to keep up to date with these advances, they have two options: to spend hours and hours searching for quality information and reliable sources or to look for a program that provides everything they need to know, with the guarantee of having the best and most up-to-date content on the subject. TECH opts for the second option and offers graduates the opportunity to pursue a qualification that will provide them with everything they need to know not only to update their knowledge, but also to improve and expand it.

This Postgraduate Certificate in Biomedical Image Capture and Analysis provides an in-depth understanding of the objectives of imaging systems in medicine, as well as the different types: radiology, ultrasound, computed tomography, magnetic resonance imaging and nuclear medicine. In addition, it focuses on image processing, analysis and segmentation. Finally, the program delves into image-guided interventions, *Deep Learning* and *Machine Learning* in medical imaging.

A program managed by experts in the field with extensive professional experience with all the facilities and conveniences that comes with being completely online. The specialist will also have 180 hours of not only theoretical content, but also practical content in the form of real clinical cases, as well as multimedia material and research articles that will allow them to learn more about each topic.

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

- Practical cases presented by experts in Biomedicine
- The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable 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 work.
- Content that is accessible from any fixed or portable device with an Internet connection

With this Postgraduate Certificate, you will stand out among specialists for your expertise in ultrasound analysis, radiological tests, computed tomography and magnetic resonance imaging"

Decades of advances in Biomedical Image Capture and Analysis in a Postgraduate Certificate that will give you everything you need to know"

Access to real clinical cases where you can visualize the concepts covered during the program.

Learn more about image processing from the best experts in the field.

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

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Objectives

The purpose of this Postgraduate Certificate is to provide specialists with the necessary tools and knowledge that will allow them to perform with ease, fluency and confidence in image capture and analysis. In addition, as a university strives to guarantee the best educational experience, TECH provides graduates with the most up-to-date information in the sector and offers them the possibility of organizing this Postgraduate Certificate based on their own schedule.

TECH will help you overcome your goals in less time than you think with its modern program and the best tools"

General Objectives

- Generate specialized knowledge on the main types of biomedical signals and their uses
- Develop the physical and mathematical knowledge underlying biomedical signals
- Fundamentals of the principles governing signal analysis and processing systems
- Analyze the main applications, trends and lines of research and development in the field of biomedical signals
- Develop expertise in classical mechanics and fluid mechanics
- Analyze the general functioning of the motor system and its biological mechanisms
- Develop models and techniques for the design and prototyping of interfaces based on design methodologies and their evaluation
- Provide the student with critical skills and tools for interface assessment
- Explore the interfaces used in pioneering technology in the biomedical sector
- Analyze the fundamentals of medical imaging acquisition, inferring its social impact
- Develop specialized knowledge about the operation of the different imaging techniques, understanding the physics behind each modality
- Identify the usefulness of each method in relation to its characteristic clinical applications
- Investigate post-processing and management of acquired images
- Use and design biomedical information management systems
- Analyze current digital health applications and design biomedical applications in a hospital setting or clinical center

Specific Objectives

◆ Develop specialized knowledge about medical imaging as well as the DICOM standard

◆ Analyze the radiological technique for medical imaging, clinical applications and aspects influencing the outcome

◆ Examine the technique of magnetic resonance imaging for medical imaging, clinical applications, and aspects influencing outcome

◆ Analyze the radiological technique for medical imaging, clinical applications and aspects influencing the outcome

◆ Evaluate the effect of noise on clinical images as well as different image processing methods

◆ Present and analyze image segmentation technologies and explain their usefulness

◆ Gain a deeper understanding of the direct relationship between surgical interventions and imaging techniques

You will improve progressively, but from the first day you will notice an improvement"

03

Course Management

In order to offer the best and most complete educational program, it is necessary to have a faculty that is up to the task. That is why TECH has selected a group of specialists in biomedical science, with a broad professional background and research experience. They will be available to answer any questions that may arise during the program and will be willing to help whenever necessary.

The experience of the faculty of this Postgraduate Certificate will guide you to improve and will help you to obtain a more practical and realistic view of image analysis in biomedicine"

Management

Mr. Ruiz Díez, Carlos

- Researcher at the National Microelectronics Center of the CSIC
- Researcher. Composting Research Group of the Department of Chemical, Biological and Environmental Engineering of the UAB.
- Founder and product development at NoTime Ecobrand, a fashion and recycling brand.
- Development cooperation project manager for the NGO Future Child Africa in Zimbabwe.
- Graduate in Industrial Technologies Engineering from Pontificia University de Comillas ICAI.
- Master's Degree in Biological and Environmental Engineering from the Autonomous University of Barcelona.
- Master's Degree in Environmental Management from Spanish Open University

Professors

Ms. Ruiz Díez, Sara

- Member of the Neural Rehabilitation Group, Instituto Cajal del CSIC.
- Responsible for illustrations for short treatise on angiology and vascular surgery, by Dr. Ruiz Grande
- Degree in Biomedical Engineering from the Polytechnic University of Madrid.
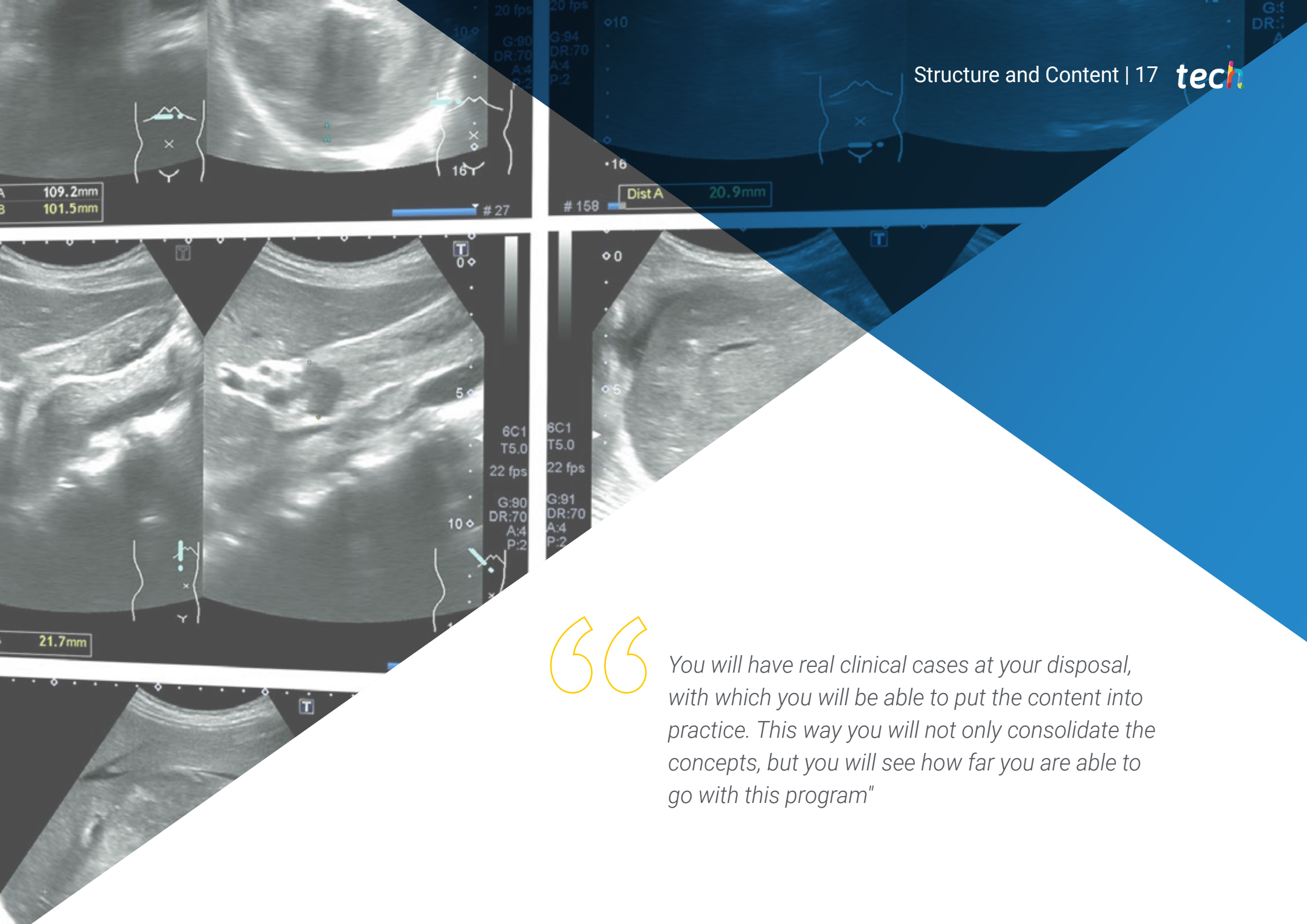- Specialty in Biomaterials, Biomechanics and Medical Devices.

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Structure and Content

From the first day, specialists will be provided with the entire content of this Postgraduate Certificate, which has been selected by the faculty based on the most up-to-date information on biomedicine image capture and analysis. In addition, the program has been adapted to the Relearning methodology, thanks to which graduates will not have to invest hours and hours in memorizing, since the terms are repeated gradually, favoring the acquisition of concepts in a progressive and more productive way.

You will have real clinical cases at your disposal, with which you will be able to put the content into practice. This way you will not only consolidate the concepts, but you will see how far you are able to go with this program"

Module 1. Biomedical Images

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Methodology

This 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"

At TECH, we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.

According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in the physician's professional practice.

Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method.

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.

2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.

3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.

4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

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.

Professionals will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.

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)

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University). With this methodology, more than 250,000 physicians have been prepared with unprecedented success in all clinical specialties regardless of surgical load. Our educational methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

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

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.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.

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 adapted in 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.

Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.

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".

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.

20%

15%

15%

3%

20%

17%

7%

3%

Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.

Testing & Retesting

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

Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical and effective way to help students progress in their learning.

Certificate

The Postgraduate Certificate in Biomedical Image Capture and Analysis guarantees, in addition to the most accurate and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.

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

This program will allow you you to obtain a **Postgraduate Certificate in Biomedical Image Capture and Analysis** 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.
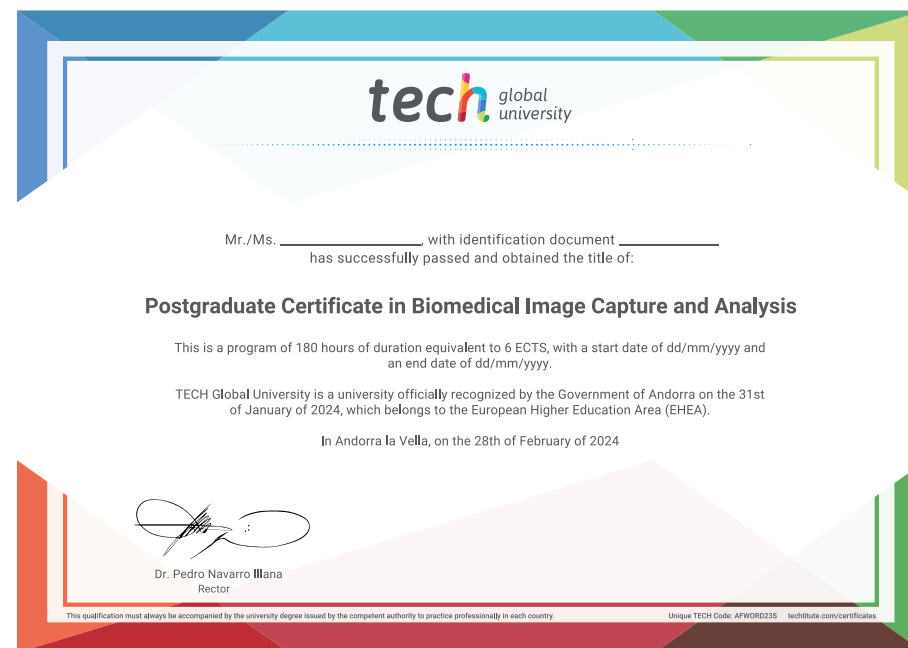
This **TECH Global University private qualification**, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Qualification: **Postgraduate Certificate in Biomedical Image Capture and Analysis**

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 Biomedical Image Capture and Analysis

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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