Postgraduate Certificate
Digital Health Applications in Biomedical Engineering

tech global university

tech global university

Postgraduate Certificate
Digital Health Applications in Biomedical Engineering

- 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/digital-health-applications-biomedical-engineering

Index

01

Introduction

The catalog of applications in Digital Health is nowadays very wide and varied. The evolution of Biomedical Engineering has brought with it countless advances in tools that facilitate the tasks of medical professionals and allow them to develop in an increasingly complete way. Knowledge of medical hardware and software is an indispensable requirement for specialists, which is why this degree was created. Through a 100% online program, the graduate will take a tour of the main applications, their uses, characteristics and protocols. All this with the help of the teaching staff and the most modern and sophisticated academic tools.

Learn about the main applications in Digital Health with artificial intelligence techniques with this 100% online degree"

Advances in technology have had a significant impact on society. Specifically, the evolution in Biomedical Engineering and continuous research have allowed the development of tools and techniques with which medical specialists can make more and more progress in their professional work in a more accurate and effective way for the diagnosis of diseases and their treatment. In this line we find hundreds of medical applications with varied uses and whose use facilitates data management and organization.

However, the use of these hardware and software for many specialists is complex and therefore they avoid, in their day-to-day work, having to deal with them. In order to bring them closer to this environment and facilitate the path towards what will be the future of medicine, TECH offers graduates this Postgraduate Certificate in Digital Health Applications in Biomedical Engineering, with which they can learn, from the hand of experts in the sector, the different applications that are part of the hospital environment. In addition, this degree will enable you to examine medical image storage and transmission systems and evaluate relational database management for Digital Health applications.

A 100% online program, with theoretical and practical content of the highest quality, accessible from any device and available for download from day one. You will also have at your disposal additional material that will allow you to extend each topic and personalized tutorials with the teachers in charge of directing the degree.

This **Postgraduate Certificate in Digital Health Applications in Biomedical Engineering** is the most comprehensive and up-to-date educational program on the market. The most important features include:

- Practical cases presented by experts in Biomedicine
- The graphic, schematic, and eminently 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
- Access to content from any fixed or portable device with an Internet connection.

Access all content from day one Download it on any device with an internet connection, wherever you are, 24 hours a day"

This Postgraduate Certificate will add quality to your professional career and will demonstrate your commitment to continue improving in order to offer the best service to your patients"

Analyze the referential framework of Digital Health applications with the best online university in the world

You will have at your disposal detailed videos on each point, interactive summaries and real case studies

The program's teaching staff includes professionals from 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 training programmed to train 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 academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

Objectives

The main objective of this Postgraduate Certificate is to bring the medical professional closer to the environment of Digital Health applications. Given its relationship with engineering, TECH has set out to adapt the content of this program in such a way that the specialist will be able to understand all the concepts, which will allow them to make the most of each topic, in addition to getting the most out of it thanks to the additional material they will have from the first day.

With TECH, its teaching team and the most modern pedagogical tools, you will achieve your goals in less time than you expected"

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

- Analyze the referential framework of digital health applications
- Examine medical image storage and transmission systems
- Evaluate relational database management for digital health applications
- Establish the operation of digital health applications based on web development
- Develop web applications in a hospital or clinical center environment and telemedicine applications
- Analyze applications with the Internet of Medical Things, IoMT and digital health applications with artificial intelligence techniques

One way to advance your career is by choosing a degree like the ones TECH offers"

03

Course Management

The management and teaching staff of this degree is made up of specialists in Biomedical Engineering with an extensive professional career. Its commitment to teaching translates into a syllabus designed with the utmost rigor, following the pedagogical line that defines TECH and based on the strictest quality criteria. In addition, his experience brings to the program a realistic and modern vision of the subject, which will serve as a guide for the graduate in his or her goal of learning more about the world of Digital Health applications.

You will have online tutoring and personalized attention during the course of the degree"

International Guest Director

Awarded by the Academy of Radiology Research for his contribution to the understanding of this area of science, Dr. Zahi A Fayad is considered a prestigious Biomedical Engineer. In this sense, most of his line of research has focused on both the detection and prevention of Cardiovascular Diseases. In this way, he has made multiple contributions in the field of Multimodal Biomedical Imaging, promoting the correct use of technological tools such as Magnetic Resonance Imaging or Positron Emission Computed Tomography in the health community.

In addition, he has an extensive professional background that has led him to occupy relevant positions such as the Director of the Institute of Biomedical Engineering and Imaging at Mount Sinai Medical Center, located in New York. It should be noted that he combines this work with his facet as a Research Scientist at the National Institutes of Health of the United States government. He has written more than 500 exhaustive clinical articles on subjects such as drug development, the integration of the most avant-garde techniques of Multimodal Cardiovascular Imaging in clinical practice or non-invasive in vivo methods in clinical trials for the development of new therapies to treat Atherosclerosis. Thanks to this, his work has facilitated the understanding of the effects of Stress on the immune system and Cardiac Pathologies significantly.

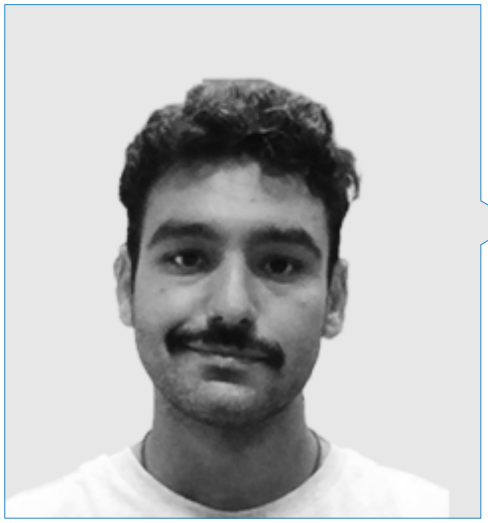
On the other hand, this specialist leads 4 multicenter clinical trials funded by the US pharmaceutical industry for the creation of new cardiovascular drugs. His objective is to improve therapeutic efficacy in conditions such as Hypertension, Heart Failure or Stroke. At the same time, it develops prevention strategies to raise public awareness of the importance of maintaining healthy lifestyle habits to promote optimal cardiac health.

Dr. A Fayad, Zahi

- Director of the Institute for Biomedical Engineering and Imaging at Mount Sinai Medical Center, New York
- Chairman of the Scientific Advisory Board of the National Institute of Health and Medical Research at the European Hospital Pompidou AP-HP in Paris, France
- Principal Investigator at Women's Hospital in Texas, United States
- Associate Editor of the "Journal of the American College of Cardiology"
- Ph.D. in Bioengineering from the University of Pennsylvania
- B.S. in Electrical Engineering from Bradley University
- Founding member of the Scientific Review Center of the National Institutes of Health of the United States government

Thanks to TECH, you will be able to learn with the best professionals in the world"

Management



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 Universidad Pontificia de Comillas ICAI.
- Master's Degree in Biological and Environmental Engineering from the Autonomous University of Barcelona.
- Master's Degree in Environmental Management from the Universidad Española a Distancia (Spanish Open University)

Professors

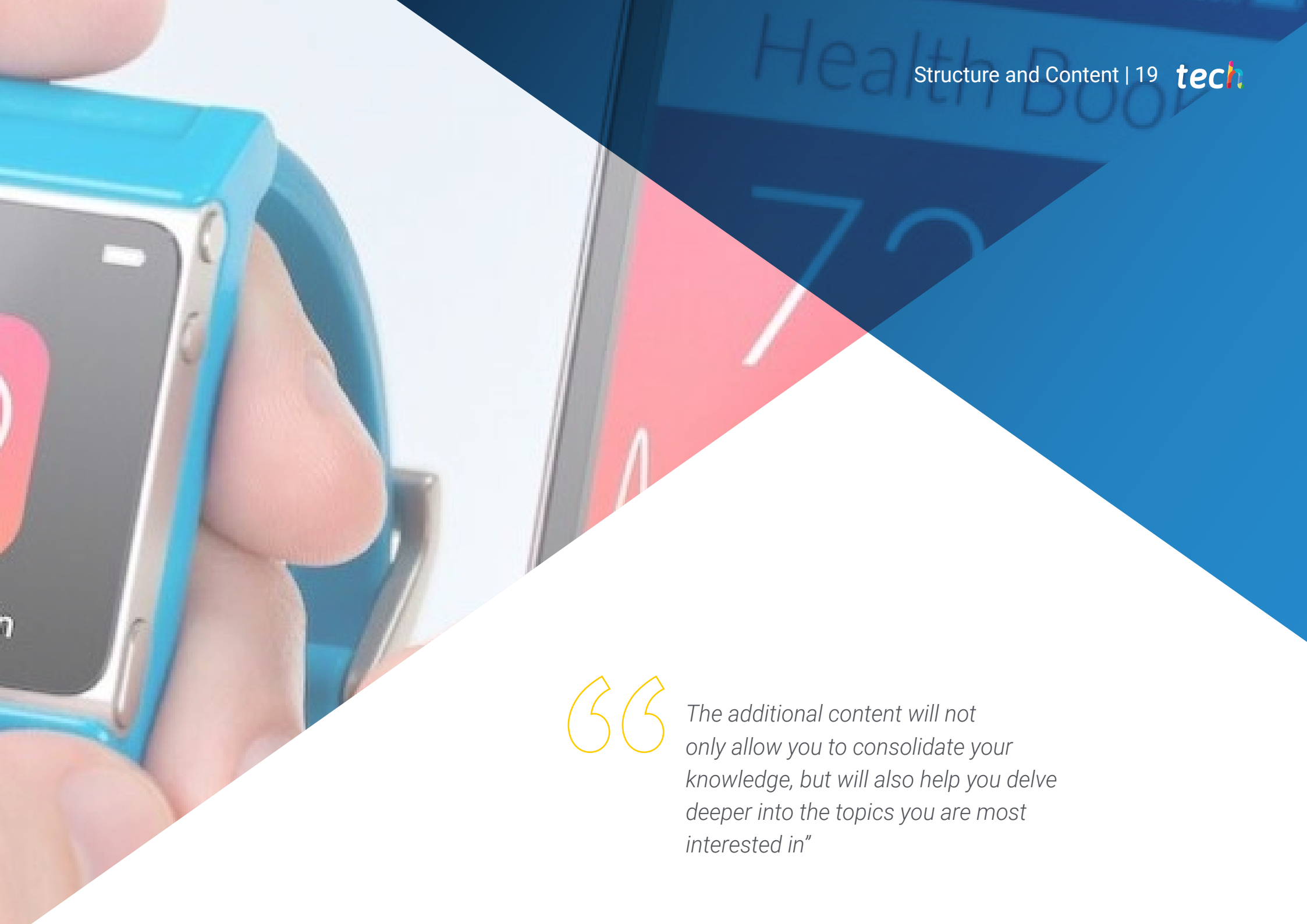
Dr. Vásquez Cevallos, Leonel

- Advisor in the preventive and corrective maintenance and sale of medical equipment and software. Received medical imaging equipment maintenance training, Seoul, South Korea. Telemedicine Cayapas Research Project Manager.. Knowledge transfer and management manager. Officegolden.
- PhD's Degree in Biomedical Engineering from the Polytechnic University of Madrid.
- Master's Degree in Telemedicine and of Bioengineering from the Polytechnic University of Madrid.
- Engineer / Graduate in Electronics and Telecommunications from the ESPOL University. Academic Training in Ecuador
- Teachers at Polytechnic University of Madrid.
- Teacher at Escuela Superior Politécnica del Litoral. Equator
- Lecturer at the University of Guayaquil.
- Lecturer at Technological University of Business in Guayaquil.

04

Structure and Content

For the development of the content of this Postgraduate Certificate, the most current developments in the Digital Health applications sector have been taken into account. Following the recommendations of the teaching group, the most complete and versatile program of the moment was created, with a structure designed based on the *relearning* methodology of which TECH is a pioneer. In this way, the course of this degree guarantees the best results and an effective and productive academic experience.



The additional content will not only allow you to consolidate your knowledge, but will also help you delve deeper into the topics you are most interested in"

Module 1. Digital Health Applications in Biomedical Engineering

1.1. Digital Health Applications
- 1.1.1. Medical Hardware and Software Applications
- 1.1.2. Software Applications: Digital Health Systems
- 1.1.3. Usability of Digital Health Systems

1.2. Medical Image Storage and Transmission Systems
- 1.2.1. Image Transmission Protocol: DICOM
- 1.2.2. Medical Image Storage and Transmission Server Installation: PAC System

1.3. Relational Database Management for Digital Health Applications
- 1.3.1. Relational Database, Concept and Examples
- 1.3.2. Database Language
- 1.3.3. Database With MySQL and PostgreSQL
- 1.3.4. Applications: Connection and Uses in Web Programming Language

1.4. Digital Health Applications Based on Web Development
- 1.4.1. Web Application Development
- 1.4.2. Web Development Model, Infrastructure, Programming Languages and Working Environments
- 1.4.3. Examples of Web Applications With the Languages: PHP, HTML, AJAX, CSS Javascript, AngularJS, NodeJS
- 1.4.4. Development of Applications in Web Frameworks: Symfony and Laravel
- 1.4.5. Development of Applications in Content Management Systems, CMS: Joomla and WordPress

1.5. WEB Applications in a Hospital Environment or Clinical Center
- 1.5.1. Applications for Patient Management: Reception, Scheduling and Collections
- 1.5.2. Applications for Medical Professionals Consultations or Medical Care, Medical History, Medical Reports, Medical Records
- 1.5.3. Web and Mobile Applications for Patients: Agenda Requests, Monitoring

1.6. Telemedicine Applications
- 1.6.1. Service Architecture Models
- 1.6.2. Telemedicine Applications: Teleradiology, Teleradiology, Telecardiology and Teledermatology
- 1.6.3. Rural Telemedicine

1.7. Applications With the Internet of Medical Things, IoMT
- 1.7.1. Models and Architectures
- 1.7.2. Medical Data Acquisition Equipment and Protocols
- 1.7.3. Applications: Patient Monitoring

1.8. Digital Health Applications Using Artificial Intelligence Techniques
- 1.8.1. *Machine Learning*
- 1.8.2. Computing Platforms and Development Environments
- 1.8.3. Examples:

1.9. Digital Health Applications with *Big Data*
- 1.9.1. Digital Health Applications with *Big Data*
- 1.9.2. Technologies Used in *Big Data*
- 1.9.3. Use Cases of *Big Data* in Digital Health

1.10. Factors Associated With Sustainable Digital Health Applications and Future Trends
- 1.10.1. Legal and Regulatory Framework
- 1.10.2. Best Practices in the Development of Digital Health Application Projects
- 1.10.3. Future Trends in Digital Health Applications

With this Postgraduate Certificate you will become the professional you have always wanted to be in only six weeks"

05

Methodology

This training program provides you with a different way of learning. Our methodology uses a cyclical learning approach: ***Re-learning***.

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 Re-learning, 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 abundant 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:

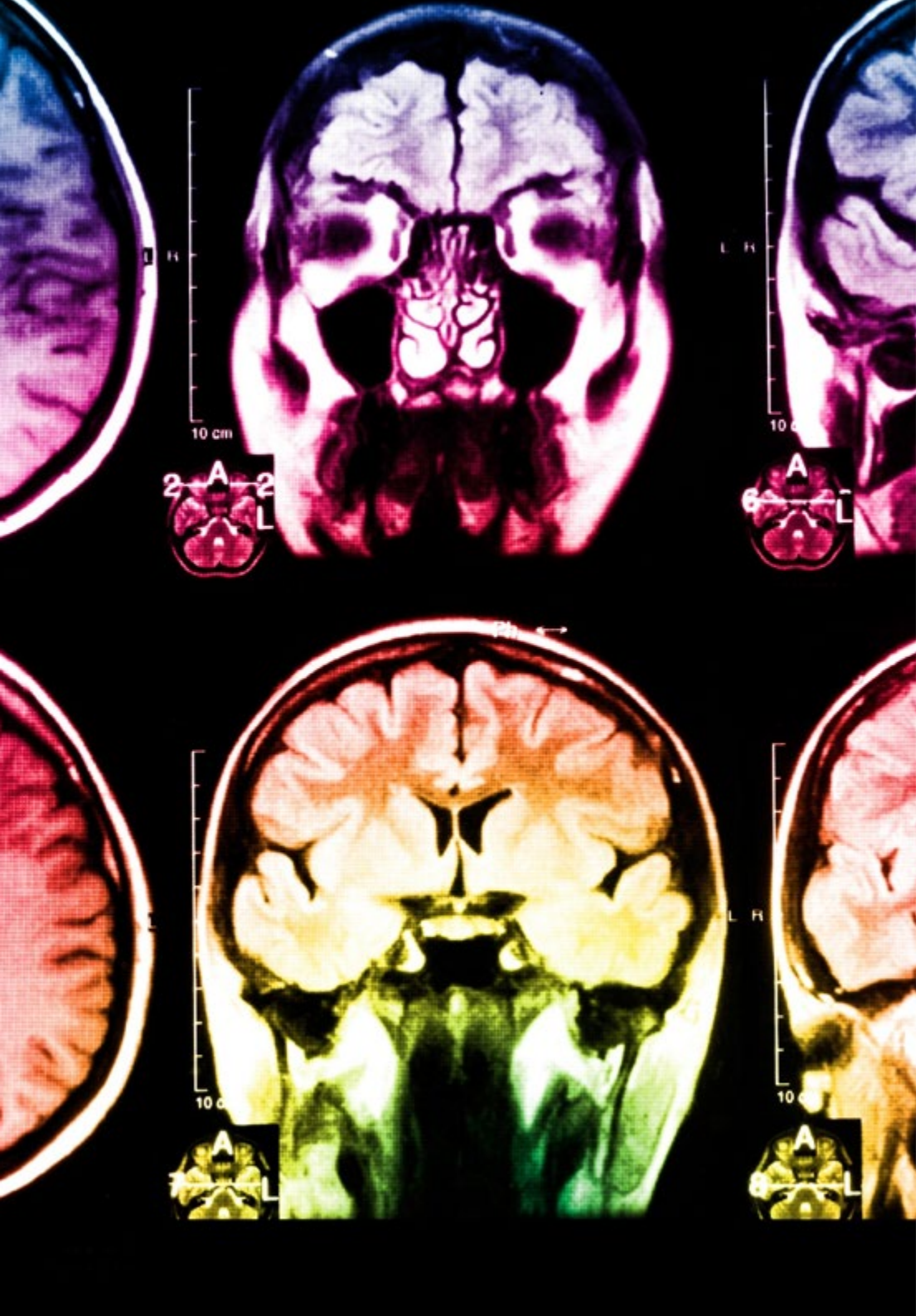
1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better 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.

Re-learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

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



At the forefront of world teaching, the Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking online university (Columbia University).

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a high socioeconomic profile and an average age of 43.5 years old.

Re-learning 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 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.

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.

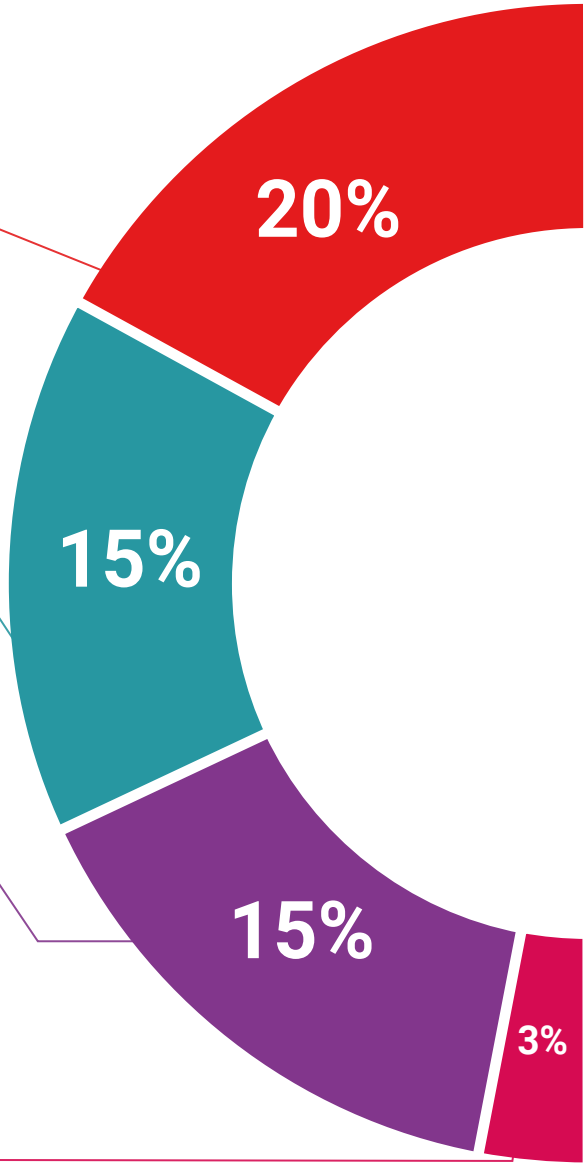
Interactive Summaries

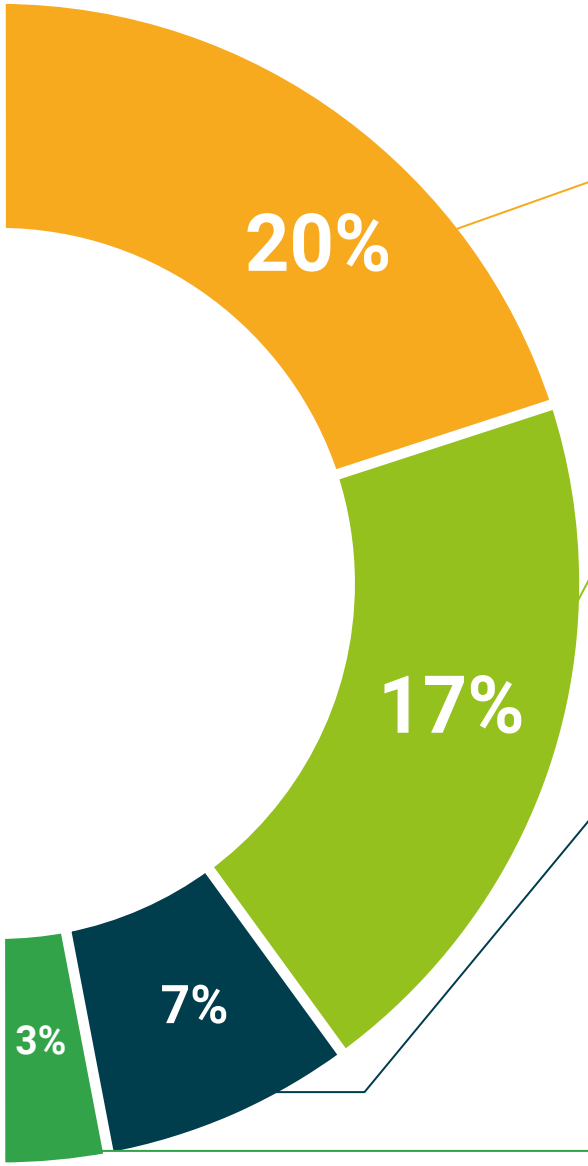
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive multimedia content presentation training Exclusive system 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.





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 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 your goals.

Classes

There is scientific evidence on the usefulness of learning by observing experts: The system termed Learning from an Expert strengthens knowledge and recall capacity, and generates confidence in the face of difficult decisions in the future.

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.

06

Certificate

The Postgraduate Certificate in Digital Health Applications in Biomedical Engineering guarantees you, in addition to the most rigorous and updated training, access to a Postgraduate Certificate issued by TECH Global University.

Successfully complete this training program and receive your university certificate without travel or laborious paperwork"

This program will allow you to obtain your **Postgraduate Certificate in Digital Health Applications in Biomedical Engineering** 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.

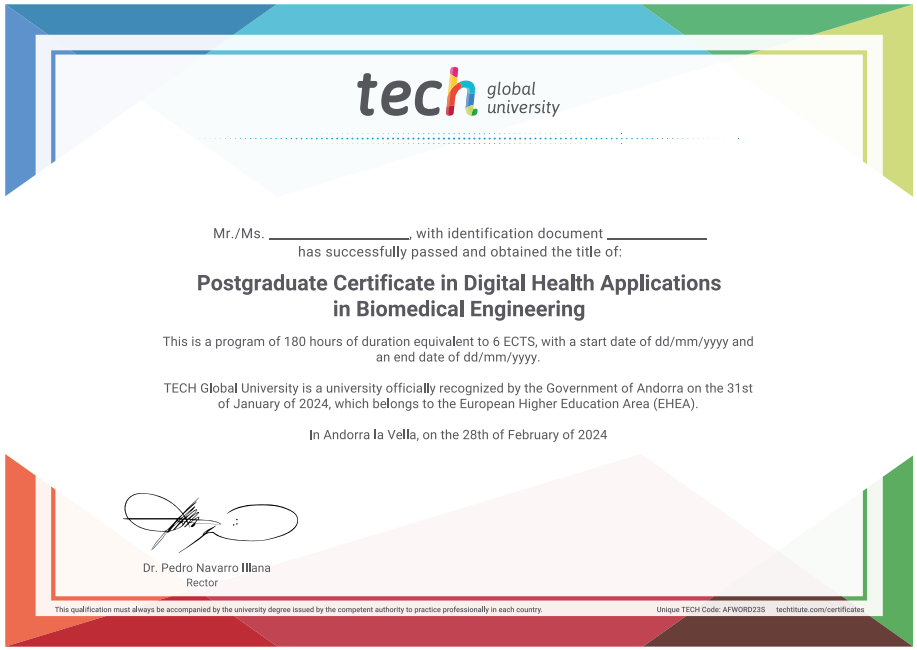
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Digital Health Applications in Biomedical Engineering**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**


tech global university

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

Postgraduate Certificate in Digital Health Applications in Biomedical Engineering

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.

tech global university

Postgraduate Certificate
Digital Health Applications in Biomedical Engineering

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

Postgraduate Certificate

Digital Health Applications in Biomedical Engineering

tech global university