Postgraduate Certificate
Biomedical and Healthcare Data Engineering

tech global university

Postgraduate Certificate
Biomedical and Healthcare Data 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/biomedical-healthcare-data-engineering**

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01
Introduction

Handling large amounts of documents is part of the daily work of medical professionals. The correct work and proper organization of biomedical and health databases is essential to avoid loss of information or mistakes to patients. This program is an opportunity to delve into that issue, allowing the specialist to analyze relational systems and helping to develop a conceptual modeling of data. All this, in a convenient online format, with theoretical and practical content designed by experts and with supplementary material that will allow you to learn more about each topic in a personalized way.

With this program you will delve into the integration of data into medical record systems, which will allow you to improve your professional productivity"

The advancement of technology has brought countless benefits. However, one of the disadvantages that arise from this development is the handling of large amounts of data. In the field of medicine, organizing all the information in a rigorous manner is essential, not only to ensure productivity, but also because any loss or mistake could have an impact on a patient's diagnosis.

The objective of this Postgraduate Certificate is to bring the specialist closer to the most important concepts that revolve around biomedical and health databases, allowing them to have a real and practical vision of this subject. Through a journey through the conceptual modeling and design of relational databases, the specialist will be able to delve into the SQL and NoSQL languages, as well as data analysis and the legal and regulatory bases. Finally, the most important concepts of database integration in medical records will be discussed in depth.

With this complete 100% online program, the specialist will be able to invest their time in improving their knowledge thanks not only to the theoretical and practical content that makes up each topic, but also to the variety of complementary material that they will find in the Virtual Classroom.

This **Postgraduate Certificate in Biomedical and Healthcare Data Engineering** contains the most complete and up-to-date Scientific program on the market. Its most notable features are:

- Practical cases presented by experts in Biomedicine
- 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.
- 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

Knowing the main relational systems for biomedical and healthcare data will make information losses in your practice zero"

" *A unique opportunity to learn about the legal bases and regulatory standards of biomedical and health databases in order to apply them in your practice"*

Access all the content from the beginning and download it to any device with an internet connection.

By choosing TECH you will be putting your educational experience in the hands of the best online university in the world.

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 throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

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Objectives

The high-technical component of this Postgraduate Certificate obliges TECH to adapt its content so that the specialist is able, from the very first moment, to understand the concepts developed throughout the syllabus. For this reason, the objective of programs such as this one is to allow the graduate to take advantage of all the information that the program offers so that they can put it into practice in the day-to-day work of the company.
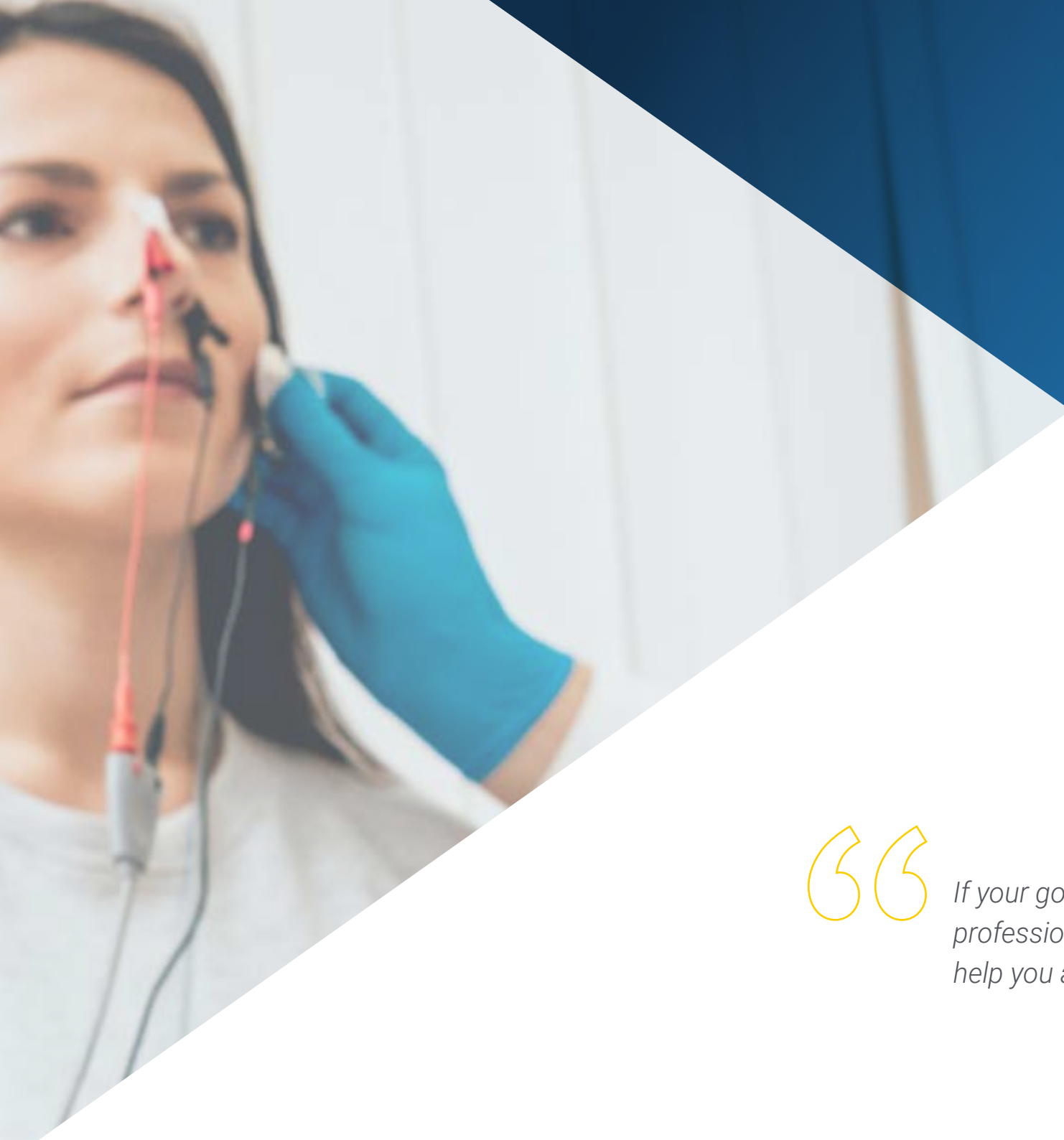
If your goal is to be a better professional, TECH has all the tools to help you achieve it"

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

- Data Structure
- Analyze Relational Systems
- Develop conceptual data modeling
- Designing and standardizing a relational database
- Examine functional dependencies between data
- Generate specialized knowledge on big data
- Deepen the ODMS architecture
- Learn about data integration in medical record systems
- Analyze the bases and restrictions

Programs like this one are the ones that make the specialist a more prepared professional and capable of facing more challenges"

03

Course Management

As part of its commitment to offer the best and most complete programs, TECH has entrusted a group of specialists in the sector with the design and structuring of this Postgraduate Certificate. This not only guarantees the highest quality of content and its adaptation to the most modern scientific postulates, but also offers graduates the possibility of arranging individualized tutorials with experts who are always ready to help them in their academic improvement.

" *Having a group of experts in the field will help you get a practical and realistic view of the subject matter*"

Management

Mr. Ruiz Díez, Carlos

- Specialist in Biological and Environmental Engineering
- Specialist in Biological and Environmental Engineering
- Researcher at the National Microelectronics Center of the CSIC
- Director of Competitive Engineering Training at ISC
- Volunteer trainer at Caritas Employment Classroom
- Research intern in the Composting Research Group of the Department of Chemical, Biological and Environmental Engineering of the UAB.
- Founder and product developer at NoTime Ecobrand, a fashion and recycling brand
- Development cooperation project manager for the NGO Future Child Africa in Zimbabwe
- Director of the Innovation Department and Founding Member of the Aerodynamic Department team of ICAI
- Speed Club: Racing Motorcycle Racing Team, Pontificia University de Comillas
- 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. Travesí Bugallo, Blanca
- Cofounder of U4IMPACT
- Marketing at GIANT HEALTH EVENT
- Coordinator of the Bioengineering course at the Technological Campus of ICAI.
- Degree in Biomedical Engineering from the Polytechnic University of Madrid.
- Master's Degree in Biomedical Engineering from the Polytechnic University of Madrid.
- Master's Degree in Health Technology Innovation by Sorbonne Université

Dr. Zavallo, Ana Teresa
- Senior data management analyst at Asphalion
- Analytical development analyst at Craveri
- Galenic development analyst at Craveri
- Technology transfer analyst at Gador
- Regulatory site compliance analyst at Merck
- Ph.D. in Pharmacy from the University of Buenos Aires
- Ph.D. in Biochemistry from the University of Buenos Aires
- Degree in Pharmacy from the University of Buenos Aires
- Degree in Biochemistry from the University of Buenos Aires
- Specialization in Magistral Formulation from BIOXENTYS
- MBA and Business Leadership in Pharmaceutical Talent from the European University of Madrid
- Postgraduate degree in Pharmaceutical Product Development

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"

04
Structure and Content

TECH is a pioneer in *relearning* methodology, a learning process that combines real practical cases with the reiteration of concepts, thus making the contents developed during the program last longer in the memory. Thanks to this methodology, the specialist will not have to invest extra hours in completing the program, and will be able to take advantage of this time to continue expanding their knowledge thanks to the additional material that they will find in the Virtual Classroom.
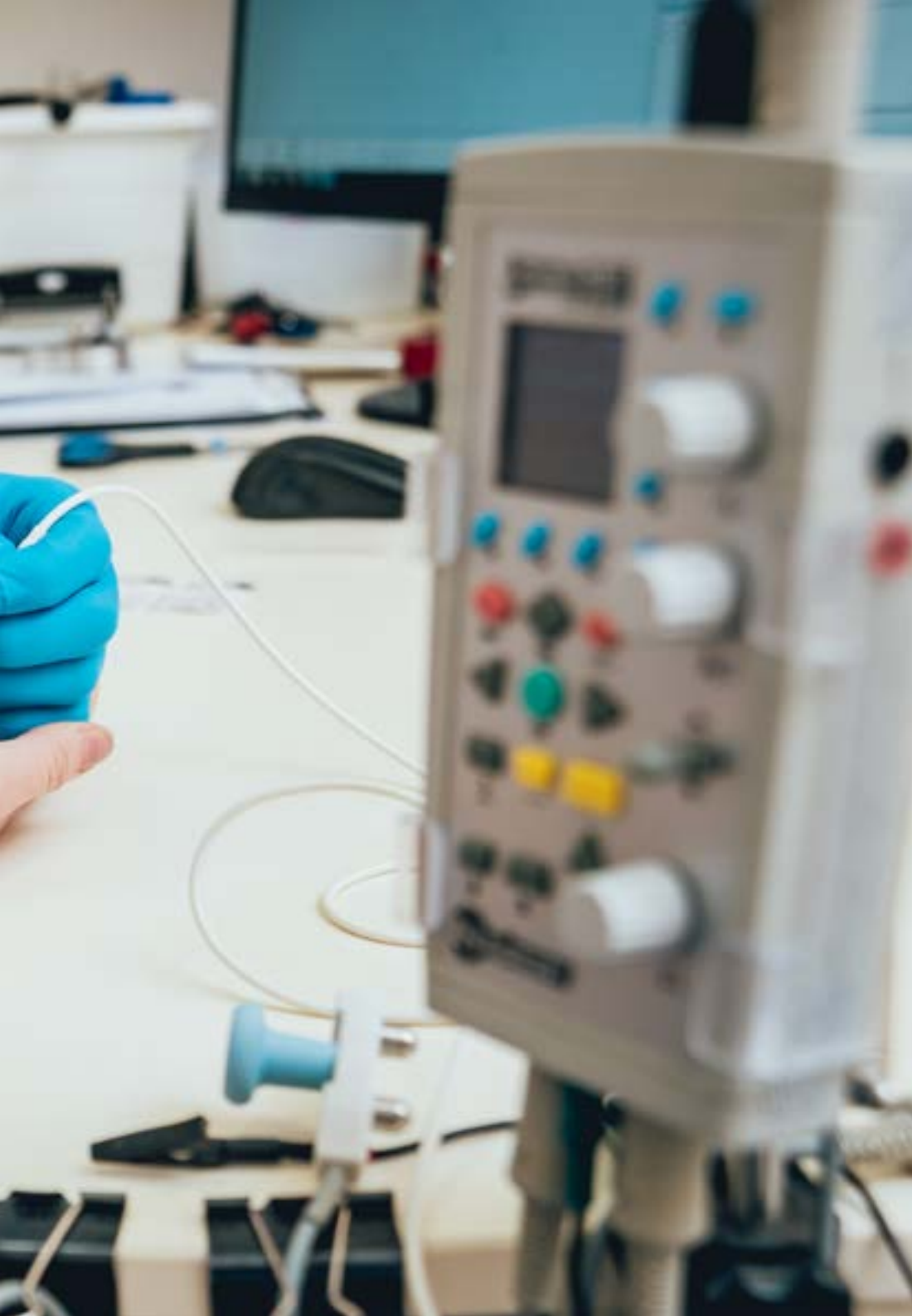
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In the Virtual Classroom you will have at your disposal top-quality videos prepared by teachers that will add a practical and differential touch to your academic experience"

Module 1. Biomedical and Healthcare Databases

Choosing TECH means choosing: the best syllabus, a professional and committed teaching staff, the flexibility of an online program and a variety of additional content that will help you achieve all your goals"

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.

06

Certificate

The Postgraduate Certificate in Biomedical and Healthcare Data Engineering guarantees, in addition to the most accurate 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 a **Postgraduate Certificate in Biomedical and Healthcare Data 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 Biomedical and Healthcare Data 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 Biomedical and Healthcare Data 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: AFWOR023S   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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