



Postgraduate Diploma Health System. Clinical Medicine and Research

» Modality: online

» Duration: 6 months

» Certificate: TECH Global University

» Credits: 18 ECTS

» Schedule: at your own pace

» Exams: online

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tech 06 | Introduction

The growing advances in information and communication technologies (ICT) applied to the healthcare field mean that dissemination is within the reach of professionals to turn them into experts. The contribution and incorporation of engineers in medicine is increasingly necessary. Hence, professionals in this area should know the methodologies to make their contribution in the labor market more beneficial. All this in order to avoid the collapse of health centers and increase their productivity exponentially, streamlining processes. This is how Industry 4.0 emerges, which in medicine applies databases for the contrasting of global diseases and stops depending on long lists of patients.

TECH has identified the request for expert engineers who can implement from bibliographic resources, to the management of health centers or the creation of parts through 3D printing. Automating a project will always make them more correct and exempt them from possible human errors. This program aims to train students to analyze the allocation of medical resources, to interpret the basis of clinical trials and to put into practice the methodology of scientific research.

In addition, students will be provided with a complete syllabus, designed by engineers specialized in clinical research, who will be available to answer any questions during the course of the program. In order to prepare students, TECH provides them with audiovisual and downloadable 100% digital content, which will allow them to consult the concepts, even after completing the Postgraduate Diploma.

This **Postgraduate Diploma in Health System. Clinical Medicine and Research** contains the most complete and up-to-date program on the market. The most important features include:

- The development of practical cases presented by experts in clinical research
- The graphic, schematic and eminently practical contents with which it is designed provide clinical and practical information on those 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



Enroll in a program that will not only teach you how the healthcare system works, but will also instruct you to identify possible ethical errors that may occur in it"



Do you still believe that the architecture of hospitals does not influence their productivity? Take part in decisions as important as the management of healthcare centers with this Postgraduate Diploma"

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 allow the professional a situated and contextual learning; that is, 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 during the course. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

In less than six months you will be able to recognize a correct methodology in scientific research and make public communications of your own results.

Knowing how to adapt to the mutation of Industry 4.0 is a must for great engineers like you. Delve into Big Data and leave conventionality behind.





tech 10 | Objectives



General Objectives

- Develop key concepts of medicine that serve as a vehicle to understand clinical medicine
- Determine the major diseases affecting the human body, classified by apparatus or systems, structuring each module into a clear outline of pathophysiology, diagnosis, and treatment
- Determine how to obtain metrics and tools for healthcare management
- Understand the basics of basic and translational scientific methodology
- Examine the ethical and best practice principles governing the different types of research in health sciences
- Identify and generate the means of funding, assessing and disseminating scientific research
- Identify the real clinical applications of the various techniques
- Develop the key concepts of computational science and theory
- Determine the applications of computation and its implication in bioinformatics
- Provide the necessary resources to practically apply all the concepts in the modules
- Develop the fundamental concepts of databases
- Determine the importance of medical databases
- Delve into the most important techniques in research
- Identify the opportunities offered by the IoT in the field of e-Health
- Provide specialized knowledge of the technologies and methodologies used in the design, development and assessment of telemedicine systems
- Determine the different types and applications of telemedicine
- Delve into the most common ethical aspects and regulatory frameworks of telemedicine
- Analyze the use of medical devices

- Develop the key concepts of entrepreneurship and innovation in e-Health
- Determine what a business model is and the types that exist
- Collect e-Health success stories and mistakes to avoid
- Apply the knowledge acquired to an original business idea



Big Data is the future; if you want to be part of it, enroll to control databases such as PROSPERO, TRIP and LILACS"



Specific Objectives

Module 1. Molecular Medicine and Pathology Diagnosis

- Understand the diseases of the circulatory and respiratory systems
- Determine the general pathology of the digestive and urinary apparatus, of the endocrine and metabolic systems and of the nervous system
- Generate expertise in diseases affecting the blood and the locomotor system

Module 2. Health system Management and Administration in Health Centers

- Determine what a health system is
- Analyze the different healthcare models in Europe
- Examine how the healthcare market functions
- Develop key knowledge of hospital design and architecture
- Generate specialized knowledge of health measures
- Delve into resource allocation methods
- Compile productivity management methods
- Establish the role played by *Project Managers*

Module 3. Research in Health Sciences

- Determine the need for scientific research
- Interpret scientific methodology
- Specify the need for types of research in health sciences depending on their context
- Establish the principles of evidence-based medicine
- Examine the needs to interpret scientific results
- Develop and interpret the basics of clinical trials
- Examine the methodology used to disseminate scientific research results and the ethical and legislative principles that govern it







tech 14 | Course Management

Management



Ms. Sirera Pérez, Ángela

- Biomedical Engineer expert in Nuclear Medicine and exoskeleton design.
- Designer of specific parts for 3D printing at Technadi
- Technician in the Nuclear Medicine area of the University Clinic of Navarra
- Degree in Biomedical Engineering from the University of Navarra
- MBA and Leadership in Healthcare and Medical Technology Companies

Professors

Mr. Varas Pardo, Pablo

- Biomedical Engineer Expert Data Scientist
- Data Scientist. Institute of Mathematical Sciences (ICMAT)
- Biomedical Engineer, La Paz Hospital
- Graduate in Biomedical Engineering from the Polytechnic University of Madrid.
- Internship at 12 de Octubre Hospital
- Master's Degree in Technological Innovation in Health, UPM and Higher Technical Institute of Lisbon
- Master's Degree in Biomedical Engineering Polytechnic University of Madrid

Dr. Pacheco Gutiérrez, Victor Alexander

- Specialist in Orthopedics and Sports Medicine, Dr. Sulaiman Al Habib Hospital
- Medical Advisor, Venezuelan Cycling Federation
- Specialist, Department of Shoulder and Elbow Orthopedics and Sports Medicine, La Isabelica Clinical Center
- Medical advisor to several baseball clubs and to the Carabobo Boxing Association
- Degree in Medicine, University of Carabobo
- \bullet Specialty in Orthopedics and Traumatology, Dr. Enrique Tejera Hospital City





Make the most of this opportunity to learn about the latest advances in this area in order to apply it to your daily practice"





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Module 1. Molecular Medicine and Pathology Diagnosis

- 1.1. Molecular Medicine
 - 1.1.1. Cellular and Molecular Biology. Cell Injury and Cell Death. Aging
 - 1.1.2. Diseases Caused by Microorganisms and Host Defence
 - 1.1.3. Autoimmune Diseases
 - 1.1.4. Toxicological Diseases
 - 1.1.5. Hypoxia Diseases
 - 1.1.6. Diseases related to the Environment
 - 1.1.7. Genetic Diseases and Epigenetics
 - 1.1.8. Oncological Diseases
- 1.2. Circulatory System
 - 1.2.1. Anatomy and Function
 - 1.2.2. Myocardial Diseases and Heart Failure
 - 1.2.3. Cardiac Rhythm Diseases
 - 1.2.4. Valvular and Pericardial Diseases
 - 1.2.5. Atherosclerosis, Arteriosclerosis and Arterial Hypertension
 - 1.2.6. Peripheral Arterial and Venous Disease
 - 1.2.7. Lymphatic Disease (Greatly Overlooked)
- 1.3. Respiratory Diseases
 - 1.3.1. Anatomy and Function
 - 1.3.2. Acute and Chronic Obstructive Pulmonary Diseases
 - 1.3.3. Pleural and Mediastinal Diseases
 - 1.3.4. Infectious Diseases of the Pulmonary Parenchyma and Bronchi
 - 1.3.5. Pulmonary Circulation Diseases
- 1.4. Digestive System Diseases
 - 1.4.1. Anatomy and Function
 - 1.4.2. Digestive System, Nutrition and Hydroelectrolyte Exchange
 - 1.4.3. Gastroesophageal Diseases
 - 1.4.4. Gastrointestinal Infectious Diseases
 - 1.4.5. Liver and Biliary Tract Diseases
 - 1.4.6. Pancreatic Diseases
 - 1.4.7. Colon Diseases

- 1.5. Renal and Urinary Tract Diseases
 - 1.5.1. Anatomy and Function
 - 1.5.2. Renal Insufficiency (Prerenal, Renal and Postrenal), How They Are Triggered
 - 1.5.3. Obstructive Urinary Tract Diseases
 - 1.5.4. Sphincteric Insufficiency in the Urinary Tract
 - 1.5.5. Nephrotic Syndrome and Nephritic Syndrome
- 1.6. Endocrine System Diseases
 - 1.6.1. Anatomy and Function
 - 1.6.2. The Menstrual Cycle and Associated Conditions
 - 1.6.3. Thyroid Disease
 - 1.6.4. Adrenal Insufficiency
 - 1.6.5. Disorders of Sexual Differentiation
 - 1.6.6. Hypothalamic-Pituitary Axis, Calcium Metabolism, Vitamin D and Effects on Growth and Skeleton
- 1.7. Metabolism and Nutrition
 - 1.7.1. Essential and Non-Essential Nutrients: Clarifying Definitions
 - 1.7.2. Carbohydrate Metabolism and Alterations
 - 1.7.3. Protein Metabolism and Alterations
 - 1.7.4. Lipids Metabolism and Alterations
 - 1.7.5. Iron Metabolism and Alterations
 - 1.7.6. Disorders of Acid-Base Balance
 - 1.7.7. Sodium and Potassium Metabolism and Alterations
 - 1.7.8. Nutritional Diseases (Hypercaloric and Hypocaloric)
- 1.8. Hematologic Diseases
 - 1.8.1. Anatomy and Function
 - 1.8.2. Red Blood Cell Disorders
 - 1.8.3. Diseases of White Blood Cells, Lymph Nodes and Spleen
 - 1.8.4. Hemostasis and Bleeding Diseases
- 1.9. Musculoskeletal System Diseases
 - 1.9.1. Anatomy and Function
 - 1.9.2. Joints: Types and Function
 - 1.9.3. Bone Regeneration
 - 1.9.4. Normal and Pathological Skeletal System Development

Structure and Content | 19 tech

- 1.9.5. Deformities of the Upper and Lower Limbs
- 1.9.6. Joint Pathology, Cartilage, and Synovial Fluid Analysis
- 1.9.7. Joint Diseases with Immunologic Origin
- 1.10. Nervous System Diseases
 - 1.10.1. Anatomy and Function
 - 1.10.2. Central and Peripheral Nervous System Development
 - 1.10.3. Development of the Spine and Components
 - 1.10.4. Cerebellum and Proprioceptive Diseases
 - 1.10.5. Brain Disorders (Central Nervous System)
 - 1.10.6. Spinal Cord and Cerebrospinal Fluid Diseases
 - 1.10.7. Stenotic Diseases of the Peripheral Nervous System
 - 1.10.8. Infectious Diseases of the Central Nervous System
 - 1.10.9. Cerebrovascular Disease (Stenotic and Hemorrhagic)

Module 2. Health system Management and Administration in Health Centers

- 2.1. Healthcare Systems
 - 2.1.1. Healthcare Systems
 - 2.1.2. Healthcare Systems according to the WHO
 - 2.1.2. Healthcare Context
- 2.2. Healthcare Models I. Bismark Model vs. Beveridge Model
 - 2.2.1. Bismark Model
 - 2.2.2. Beveridge Model
 - 2.2.3. Bismark Model vs. Beveridge Model
- 2.3. Healthcare Models II. Semashko, Private and Mixed Models
 - 2.3.1. Semashko Model
 - 2.3.2. Private Model
 - 2.3.3. Mixed Models
- 2.4. The Healthcare Market
 - 2.4.1. The Healthcare Market
 - 2.4.2. Regulation and Limitations of the Healthcare Market
 - 2.4.3. Payment Methods for Doctors and Hospitals
 - 2.4.4. Clinical Engineers

- 2.5. Hospitals. Typology
 - 2.5.1. Hospital Architecture
 - 2.5.2. Types of Hospitals
 - 2.5.3. Hospital Organization
- 2.6. Health Metrics
 - 2.6.1. Mortality
 - 2.6.2. Morbidity
 - 2.6.3. Healthy Life Years
- 2.7. Health Resource Allocation Methods
 - 2.7.1. Lineal Programming
 - 2.7.2. Maximization Models
 - 2.7.3. Minimization Models
- 2.8. Measuring Healthcare Productivity
 - 2.8.1. Measuring Health Productivity
 - 2.8.2. Productivity Ratios
 - 2.8.3. Input Adjustment
 - 2.8.4. Output Adjustment
- 2.9. Health Process Improvement
 - 2.9.1. Lean Management Process
 - 2.9.2. Work Simplification Tools
 - 2.9.3. Troubleshooting Tools
- 2.10. Healthcare Project Management
 - 2.10.1. The Role Played by Project Managers
 - 2.10.2. Team and Project Management Tools
 - 2.10.3. Schedule and Time Management

Module 3. Research in Health Sciences

- 3.1. Scientific Research I. The Scientific Method
 - 3.1.1. Scientific Research
 - 3.1.2. Research in Health Sciences
 - 3.1.3. The Scientific Method

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3.2.	Scienti	fic Research II. Typology
	3.2.1.	Basic Research
	3.2.2.	Clinical Research
	3.2.3.	Translational Research
3.3.	Evidence-Based Medicine	
	3.3.1.	Evidence-Based Medicine
	3.3.2.	Principles of Evidence-Based Medicine
	3.3.3.	Methodology of Evidence-Based Medicine
3.4.	Ethics and Legislation in Scientific Research. Declaration of Helsinki	
	3.4.1.	The Ethics Committee
	3.4.2.	Declaration of Helsinki
	3.4.3.	Ethics in Health Sciences
3.5.	Scientific Research Results	
	3.5.1.	Methods
	3.5.2.	Rigor and Statistical Power
	3.5.3.	Scientific Results Validity
3.6.	Public Communication	
	3.6.1.	Scientific Societies
	3.6.2.	Scientific Conferences
	3.6.3.	Communication Structures
3.7.	Funding in Scientific Research	
	3.7.1.	Structure in Scientific Projects
	3.7.2.	Public Financing
	3.7.3.	Private and Industrial Funding
3.8.	Scientific Resources in Literature Searching. Health Sciences Databases I	
	3.8.1.	PubMed-Medline
	3.8.2.	Embase
	3.8.3.	WOS and JCR
	3.8.4.	Scopus and Scimago
	3.8.5.	Micromedex
	3.8.6.	MEDES

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3.8.7. IBECS
      3.8.8. LILACS
      3.8.9. BDENF
      3.8.10. Cuidatge
      3.8.11. CINAHL
      3.8.12. Cuiden Plus
      3.8.13. Enfispo
      3.8.14. NCBI (OMIM, TOXNET) and NIH (National Cancer Institute) Databases
3.9. Scientific Resources in Literature Searching. Health Sciences Databases II
      3.9.1. NARIC - Rehabdata
      3.9.2. PEDro
      3.9.3. ASABE: Technical Library
      3.9.4. CAB Abstracts
      3.9.5. Centre for Reviews and Dissemination (CRD) Databases:
      3.9.6. Biomed Central BMC
      3.9.7. ClinicalTrials.gov
      3.9.8. Clinical Trials Register
      3.9.9. DOAJ- Directory of Open Access Journals
      3.9.10. PROSPERO (International Register of Systemic Review)
      3.9.11. TRIP
      3.9.12. LILACS
      3.9.13. NIH. Medical Library
      3.9.14. Medline Plus
      3.9.15. OPS
3.10. Scientific Resources in Literature Searching III. Search Engines and Platforms
      3.10.1. Search Engines and Multisearch Engines
              3.10.1.1. Findr
              3.10.1.2. Dimensions
              3.10.1.3. Google Scholar
              3.10.1.4. Microsoft Academic
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3.10.2. WHO International Clinical Trials Registration Platform (ICTRP)

3.10.2.1. PubMed Central PMC

3.10.2.2. Open Science Collector (RECOLECTA)

3.10.2.3. Zenodo

3.10.3. Doctoral Thesis Search Engines

3.10.3.1. DART-Europe

3.10.3.2. Dialnet

3.10.3.3. OATD (Open Access Theses and Dissertations)

3.10.3.4. TDR (Doctoral Theses Online)

3.10.3.5. TESEO

3.10.4. Bibliography Managers

3.10.4.1. Endnote Online

3.10.4.2. Mendeley

3.10.4.3. Zotero

3.10.4.4. Citeulike

3.10.4.5. Refworks

3.10.5. Digital Social Networks for Researchers

3.10.5.1. Scielo

3.10.5.2. Dialnet

3.10.5.3. Free Medical Journals

3.10.5.4. DOAJ

3.10.5.5. Open Science Directory

3.10.5.6. Redalyc

3.10.5.7. Academia.edu

3.10.5.8. Mendeley

3.10.5.9. ResearchGate

3.10.6. Social Web 2.0 Resources

3.10.6.1. Delicious

3.10.6.2. SlideShare

3.10.6.3. YouTube.

3.10.6.4. Twitter

3.10.6.5. Health Science Blogs

3.10.6.6. Facebook

3.10.6.7. Evernote

3.10.6.8. Dropbox

3.10.6.9. Google Drive

3.10.7. Scientific Journal Publishers and Aggregators Portals

3.10.7.1. Science Direct

3.10.7.2. Ovid

3.10.7.3. Springer

3.10.7.4. Wiley

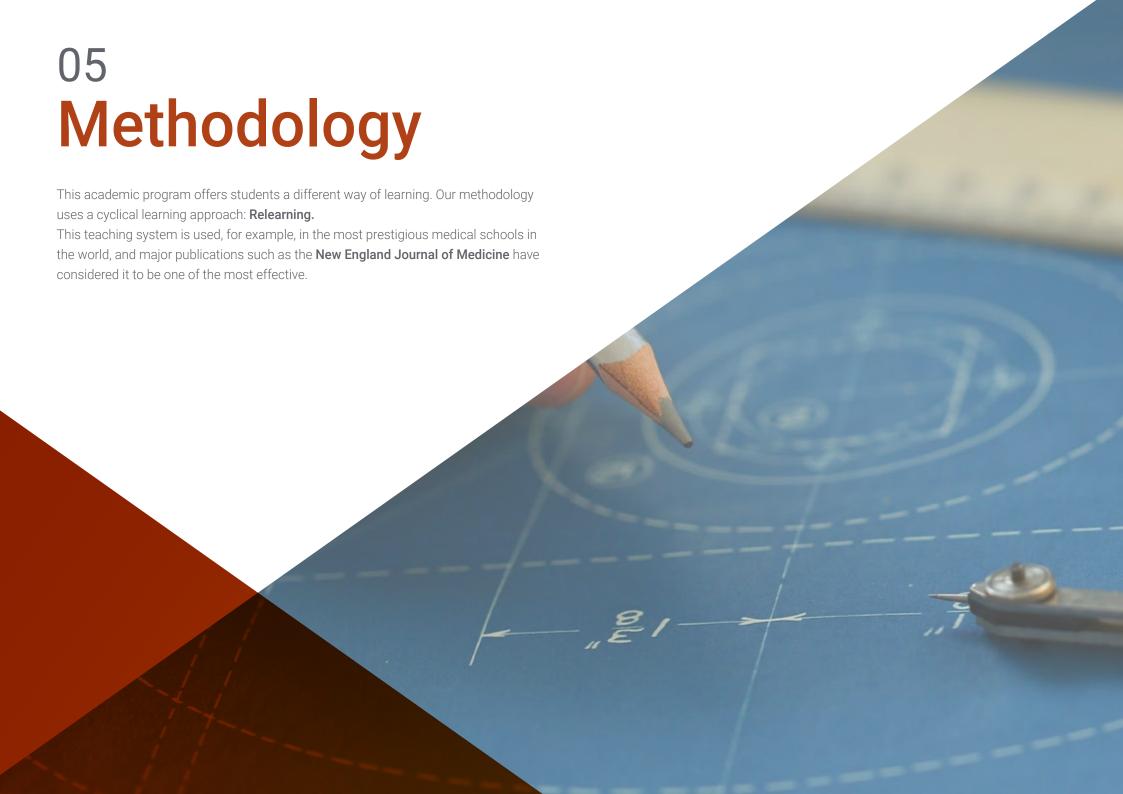
3.10.7.5. Proquest

3.10.7.6. Ebsco

3.10.7.7. BioMed Central



A program designed for future experts in scientific research that will help you become the successful engineer you've always wanted to be"





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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.

Methodology | 25 tech



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.

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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.



Methodology | 27 tech

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.





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.

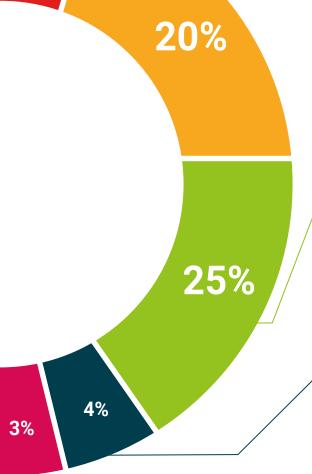


This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

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.









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This program will allow you to obtain your **Postgraduate Diploma in Health System. Clinical Medicine and Research** 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 Diploma in Health System. Clinical Medicine and Research

Modality: online

Duration: 6 months

Accreditation: 18 ECTS



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

Postgraduate Diploma in Health System. Clinical Medicine and Research

This is a program of 450 hours of duration equivalent to 18 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



^{*}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.

health confidence people information futors guarantee accreditation teaching institutions technology learning community commitmeters global university

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