Postgraduate Certificate

Big Data in Medicine: Massive Medical Data Processing

tech technological university

tech technological university

Postgraduate Certificate

Big Data in Medicine: Massive Medical Data Processing

- Modality: **online**
- Duration: **6 weeks**
- Certificate: **TECH Technological University**
- Dedication: **16h/week**
- Schedule: **at your own pace**
- Exams: **online**

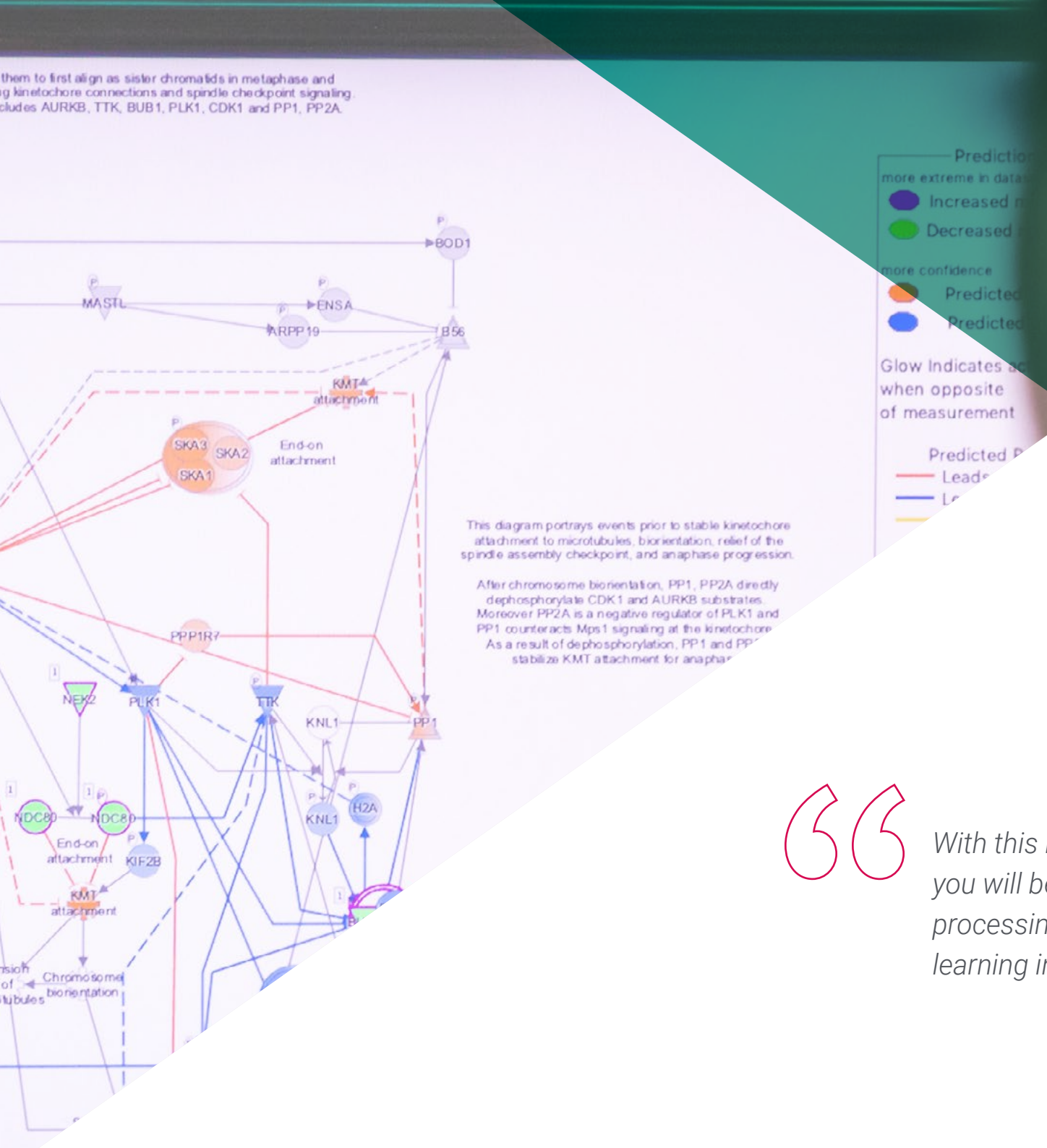
Website: **www.techtitute.com/in/nursing/postgraduate-certificate/big-data-medicine-massive-medical-data-processing**

Index

01

Introduction

The large volumes of data stored in clinical centers worldwide can be compared using Big Data. This tool makes it possible to reproduce patterns of evolution in patients with similar characteristics and even to record the side effects of pharmacological products in millions of patients. ICTs and e-Health have arrived to optimize patient care and the role of these advances in the medical area is key to improving many procedures and quality of life. In order to face the current challenges around technology applied to medicine, tomorrow's nurses need to be able to master the latest tools and techniques. TECH offers this program so that nursing graduates will be able to streamline health care, in response to the high demand in their labor market.



With this Postgraduate Certificate you will be able to master data processing through comprehensive learning in just 6 weeks"

Digital systems in medicine have enabled much more effective early prevention, diagnosis and short- and long-term follow-up than conventional ones. Examples include mobile telemedicine applications, *wearables*devices, Big Data, clinical decision support systems and IoT. Additionally, the pandemic reflected the need for these tools to bring patients and professionals closer together and, at times, to enable this relationship telematically, reducing waiting times and collapse in clinical centers.

Given the importance of having experts trained in massive data collection techniques, as well as in their special characteristics in terms of preprocessing and treatment, professionals are looking for a much more specific specialization in this area. For this reason, TECH has developed a program that focuses on the improvement and innovation of health care systems through Big Data. This is a unique opportunity for the student, as with it he will be able to acquire the knowledge of the contribution of Big Data in the interpretation of results and medical and pharmacological advances, in just 6 weeks.

Moreover, to provide this complete and rigorous program, TECH has a team of professionals who, in this case, are experts in genomics and genetic studies based on Big Data. Thanks to the experience of these teachers, students will not only have reliable theoretical content, but will also be able to guide their clinical practice with the example of specialists already experienced in the field.

This **Postgraduate Certificate in Big Data in Medicine: Massive Medical Data Processing** contains the most complete and up-to-date scientific program on the market. The most important features include:

- The development of practical cases presented by experts in the massive medical processing databases
- The graphic, schematic, and practical contents with which they are created, provide Scientific information on the disciplines that are essential for professional practice
- The practical exercises where the self-evaluation process can be carried out to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

Sign up for this Postgraduate Certificate to discover the use of Machine Learning algorithms in public health and the advantages it offers"

Thanks to TECH, you will delve into the study of omic sciences to understand Big Data as the key to the registration of molecules in the organism"

Enroll now to master repositories such as Gene Ontology and KEGG and their intervention towards the optimization of health and social care.

A program that will allow you to specialize in Big Data without having to do without other obligations in both your personal and professional life.

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 training programmed to train in real situations.

The design of this program focuses on Problem-Based Learning, in which the professional will have to try to solve the different professional practice situations that will arise throughout the academic course. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.

02

Objectives

This Postgraduate Certificate in Big Data in Medicine: Medical Mass Data Processing has been designed for graduates in Nursing to master new health care techniques, in which technology plays a key role. Those who wish to broaden their skills by focusing on digitization and mass database processing will find in this program an ideal instructional opportunity. TECH achieves this through the use of innovative pedagogical tools and audiovisual materials in various formats, such as video summaries, activities, simulation of real cases, etc. Additionally, students will have great availability by accessing the Virtual Campus through a device and Internet connection.

The objective of TECH is to optimize your health service by focusing on e-Health and becoming, in turn, a much more competitive specialist in the labor market"

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
- 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 eHealth
- 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

Specific Objectives

- Gain specialized knowledge of massive data acquisition techniques in biomedicine
- Analyze the importance of data preprocessing in Big Data
- Determine the differences between the data derived from different massive data collection techniques, as well as their special characteristics in terms of pre-processing and handling
- Provide ways of interpreting results from massive data analysis
- Examine the applications and future trends in the field of Big Data in biomedical research and public health

Enroll now in this Postgraduate Certificate to project your career path and focus on the benefits of data analysis in medicine"

03

Course Management

In order to transmit all the knowledge about the application of Big Data in medicine and the benefits of its incorporation in this clinical field, TECH has called on a professional team experienced in biomedicine, molecular studies and massive data processing. Students will have at their disposal a direct communication channel with these teachers, through which they will be able to solve their doubts about the syllabus. In this way, the theoretical and practical instruction of the students will be carried out in an extensive way, achieving, through simulation of real cases, to expand and update the nurses' knowledge in e-health.

Don't wait any longer, learn through an innovative pedagogical system and the support of a teaching team with whom you will interact to ask all your questions"

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 Health care and Medical Technology Companies


set_01
set_01
set_02
culture_t1
culture_t2
culture_t3
zoom_01
zoom_02
zoom_03
analize_01
analize_02
analize_03

04

Structure and Content

The content of this Postgraduate Certificate in Big Data in Medicine: Massive Medical Data Processing has been developed by experts specialized in biomedicine, scientific research and who have participated in studies in genetics and genomics. Additionally to teaching the subject of massive data processing, these professionals will use their real experience in the clinical field to instruct nursing graduates taking this program. Moreover, the teaching has audiovisual materials and a theoretical-practical format, which provide academic flexibility for students to adapt the pace of study, according to their personal and professional needs.

Learn now about high-performance High-throughput technology and apply Big Data in your biomedical research"

Module 1. Big Data in Medicine: Massive Medical Data Processing

1.1. Big Data in Biomedical Research
- 1.1.1. Data Generation in Biomedicine
- 1.1.2. High Performance (High-throughput technology)
- 1.1 3. Uses of High-Throughput Data. Hypotheses in the Age of Big Data

1.2. Data Pre-Processing in Big Data
- 1.2.1. Data Pre-Processing
- 1.2.2. Methods and Approaches
- 1.2.3. Problems with Data Pre-Processing in Big Data

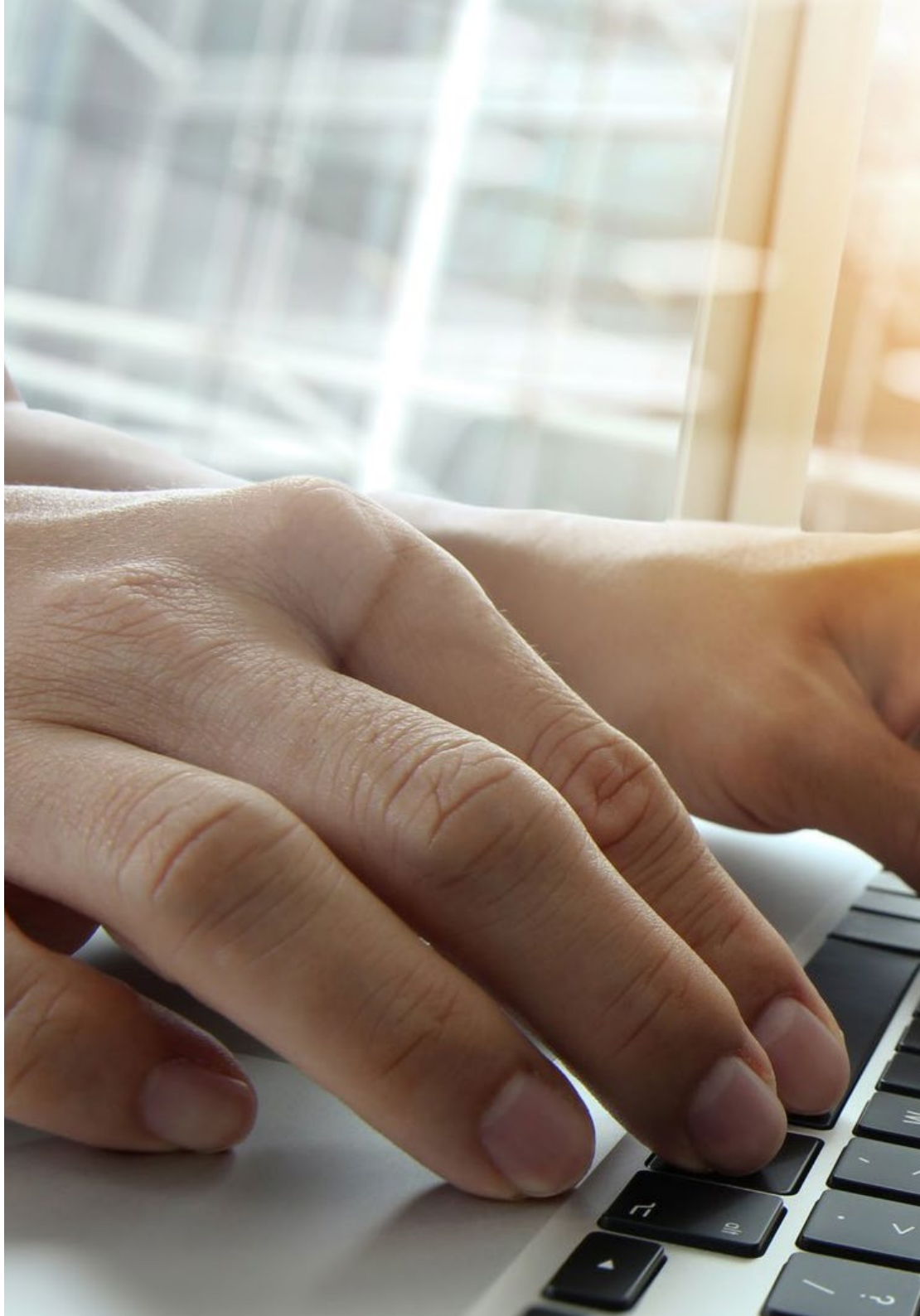
1.3. Structural Genomics
- 1.3.1. Sequencing the Human Genome
- 1.3.2. Sequencing vs Chips
- 1.3.3. Variant Discovery

1.4. Functional Genomics
- 1.4.1. Functional Notation
- 1.4.2. Mutation Risk Predictors
- 1.4.3. Association Studies in Genomics

1.5. Transcriptomics
- 1.5.1. Techniques to Obtain Massive Data in Transcriptomics: RNA-seq
- 1.5.2. Data Normalization in Transcriptomics
- 1.5.3. Differential Expression Studies

1.6. Interactomics and Epigenomics
- 1.6.1. The Role of Cromatine in Gene Expression
- 1.6.2. High-Throughput Studies in Interactomics
- 1.6.3. High-Throughput Studies in Epigenetics

1.7. Proteomics
- 1.7.1. Analysis of Mass Spectrometry Data
- 1.7.2. Post-Translational Modifications Study
- 1.7.3. Quantitative Proteomics



1.8. Enrichment and Clustering Techniques
- 1.8.1. Contextualizing Results
- 1.8.2. Clustering Algorithms in Omics Techniques
- 1.8.3. Repositories for Enrichment: Gene Ontology and KEGG

1.9. Applying Big Data to Public Health
- 1.9.1. Discovery of New Biomarkers and Therapeutic Targets
- 1.9.2. Risk Predictors
- 1.9.3. Personalized Medicine

1.10. Big Data Applied to Medicine
- 1.10.1. Potential for Diagnostic and Preventive Assistance
- 1.10.2. Use of Machine Learning Algorithms in Public Health
- 1.10.3. The Problem of Privacy

Thanks to TECH, you will analyze the role of chromatin in gene expression and master the field of study of interactomics and epigenomics"

05

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

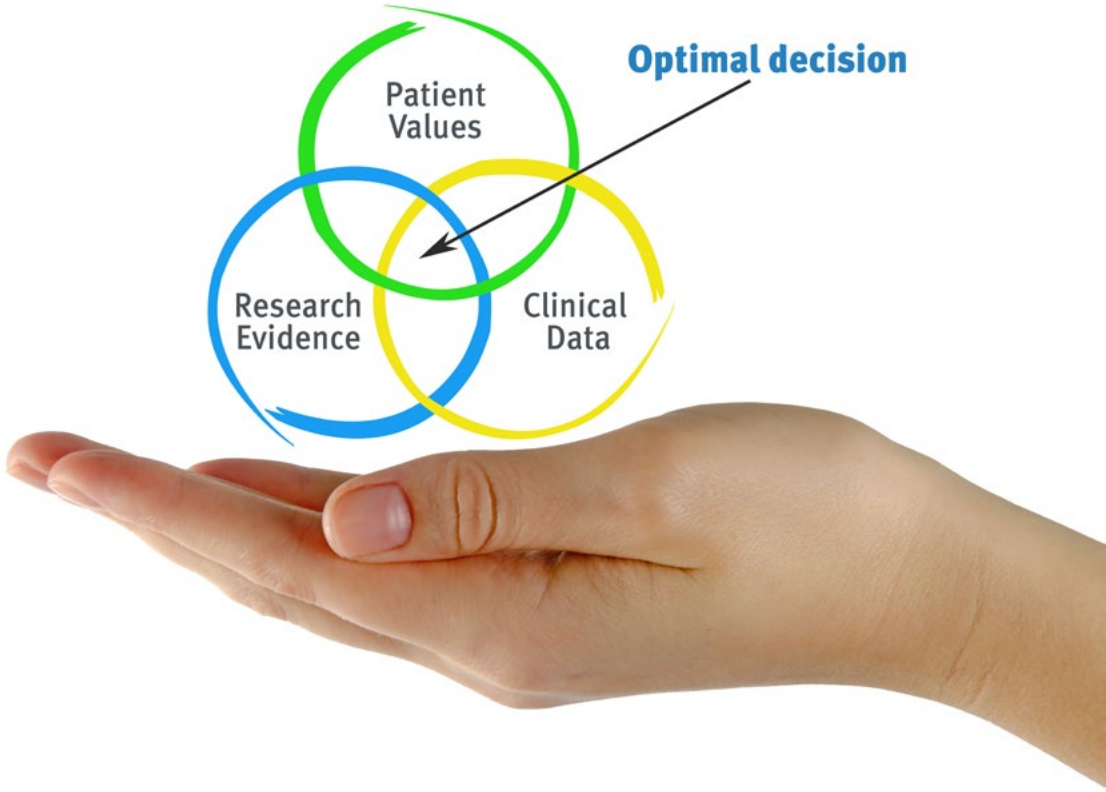
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

At TECH Nursing School we use the Case Method

In a given situation, what should a professional do? 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. Nurses learn better, faster, and more sustainably over time.

With TECH, nurses can experience a learning methodology 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, in an attempt to recreate the real conditions in professional nursing 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:

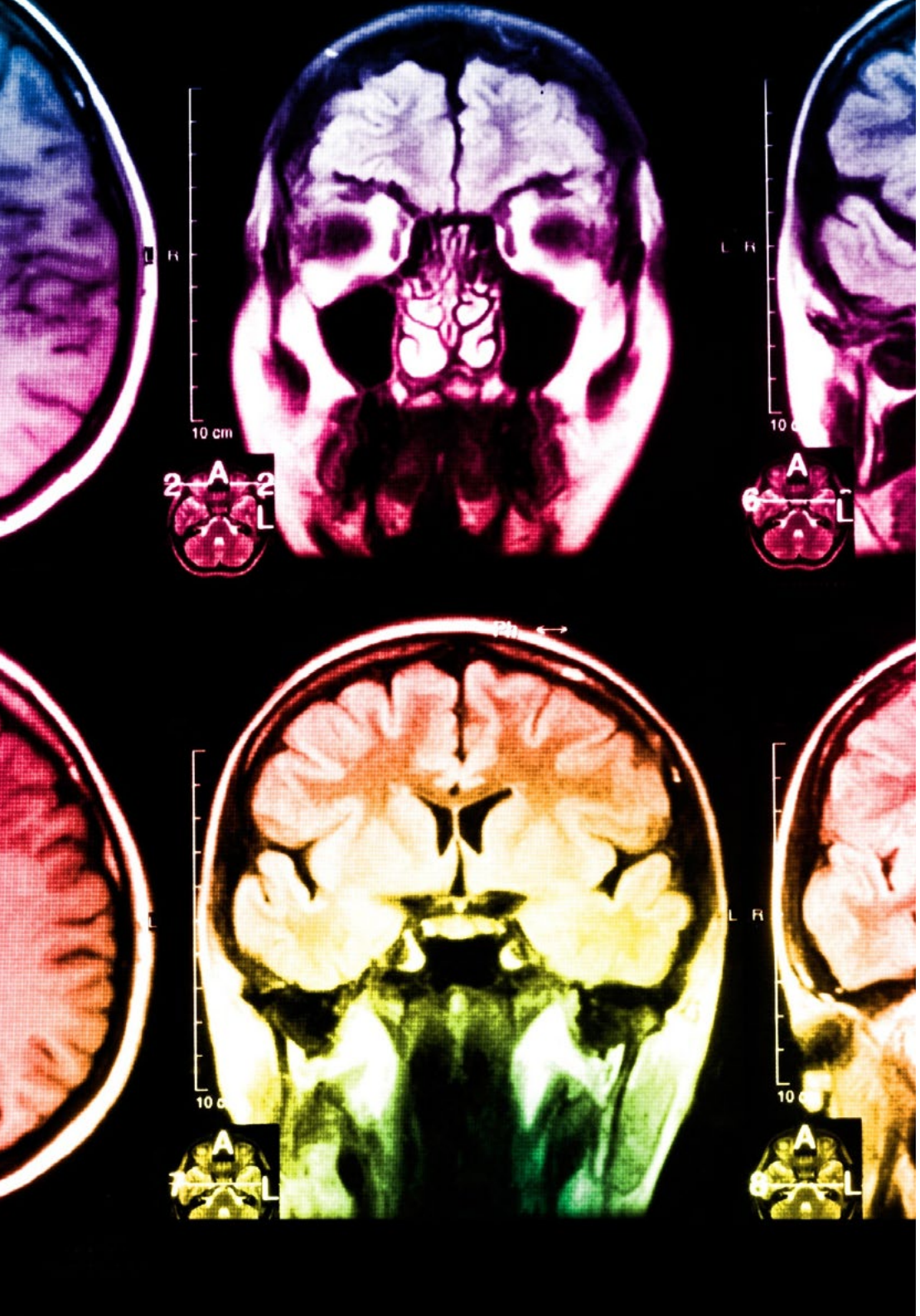
1. Nurses who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the nursing professional to better integrate knowledge acquisition into the hospital setting or primary care.
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

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

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

The nurse will learn through real cases and by solving 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 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 we have trained more than 175,000 nurses with unprecedented success in all specialities regardless of practical workload. Our pedagogical 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 really 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.

Nursing Techniques and Procedures on Video

We introduce you to the latest techniques, to the latest educational advances, 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 them as many times as you want.

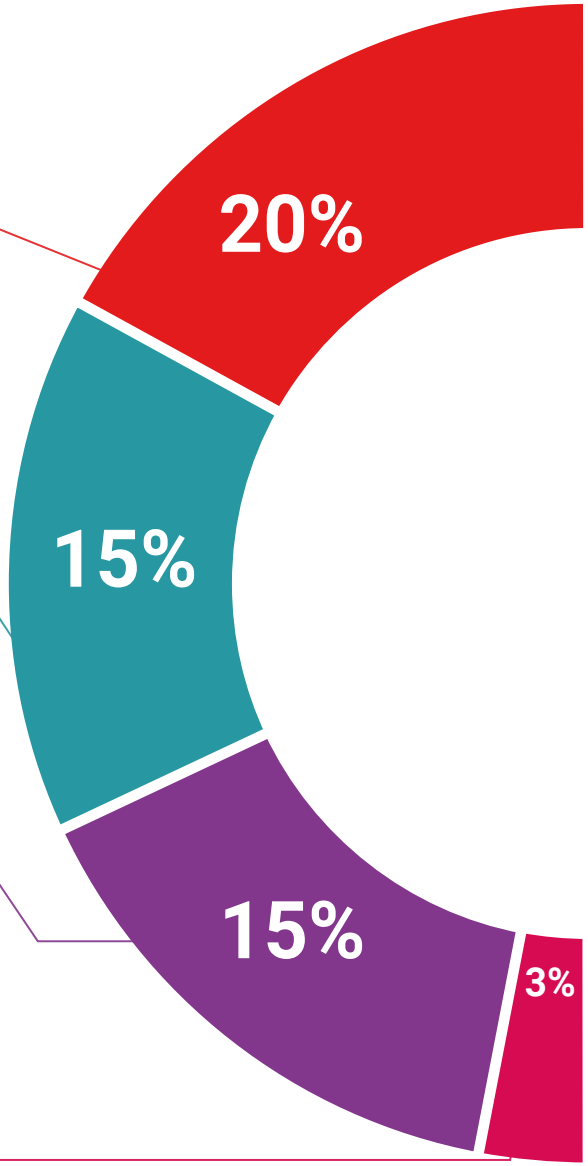
Interactive Summaries

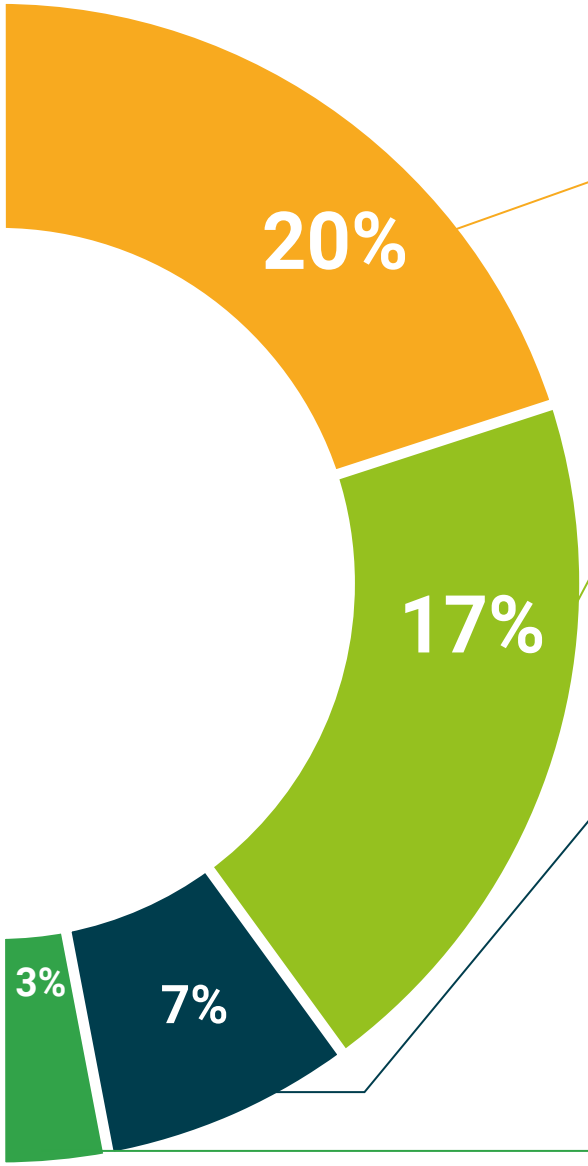
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.





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 their goals.

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.

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 Big Data en Medicina: Massive Medical Data Processing guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.

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

This **Postgraduate Certificate in Big Data in Medicine: Medical Mass Data Processing** contains the most complete and up-to-date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Big Data in Medicine: Medical Mass Data Processing**

Official Nº of Hours: **150 h.**


tech technological university

Awards the following

CERTIFICATE

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Big Data in Medicine: Massive Medical Data Processing

This is a qualification awarded by this University, equivalent to 150 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

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 certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

tech technological university

Postgraduate Certificate

Big Data in Medicine: Massive Medical Data Processing

- Modality: **online**
- Duration: **6 weeks**
- Certificate: **TECH Technological University**
- Dedication: **16h/week**
- Schedule: **at your own pace**
- Exams: **online**

Postgraduate Certificate

Big Data in Medicine: Massive Medical Data Processing

tech technological university