

Postgraduate Certificate

Big Data in Medicine: Massive
Medical Data Processing



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
- » Target Group: University Graduates who have previously completed any of the degrees in the fields of Social and Legal Sciences, Administrative and Business Sciences

Website: www.techtitute.com/pk/school-of-business/postgraduate-certificate/big-data-medicine-massive-medical-data-processing

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01 Welcome

The amount of data generated in the medical environment and the difficulties that sometimes arise when they must be processed, have led to the development and application of Big Data techniques in this context, optimizing tasks and ensuring better results. This is why Telemedicine companies are increasingly demanding the presence in their teams of professionals who perfectly handle these management strategies, aspects that the graduate will be able to work on with this program. This is an austere, multidisciplinary and dynamic program, with which the professional will be able to delve into the intricacies of massive data processing, improving, in addition, their leadership skills. All this through a 100% online and highly educational program that can be included in their resume to stand out in any personnel selection process.



Postgraduate Certificate in Big Data in Medicine: Massive Medical Data Processing.
TECH Technological University



“

Big Data covers more and more areas. For that reason, having a specialized program, in addition, in its application in the medical sector, will open many doors in the labor market”

02

Why Study at TECH?

TECH is the world's largest 100% online business school. It is an elite business school, with a model based on the highest academic standards. A world-class center for intensive managerial skills education.



“

TECH is a university at the forefront of technology, and puts all its resources at the student's disposal to help them achieve entrepreneurial success"

At TECH Technological University



Innovation

The university offers an online learning model that balances the latest educational technology with the most rigorous teaching methods. A unique method with the highest international recognition that will provide students with the keys to develop in a rapidly-evolving world, where innovation must be every entrepreneur's focus.

"*Microsoft Europe Success Story*", for integrating the innovative, interactive multi-video system.



The Highest Standards

Admissions criteria at TECH are not economic. Students don't need to make a large investment to study at this university. However, in order to obtain a qualification from TECH, the student's intelligence and ability will be tested to their limits. The institution's academic standards are exceptionally high...

95% | of TECH students successfully complete their studies



Networking

Professionals from countries all over the world attend TECH, allowing students to establish a large network of contacts that may prove useful to them in the future.

+100000

executives prepared each year

+200

different nationalities



Empowerment

Students will grow hand in hand with the best companies and highly regarded and influential professionals. TECH has developed strategic partnerships and a valuable network of contacts with major economic players in 7 continents.

+500

collaborative agreements with leading companies



Talent

This program is a unique initiative to allow students to showcase their talent in the business world. An opportunity that will allow them to voice their concerns and share their business vision.

After completing this program, TECH helps students show the world their talent.



Multicultural Context

While studying at TECH, students will enjoy a unique experience. Study in a multicultural context. In a program with a global vision, through which students can learn about the operating methods in different parts of the world, and gather the latest information that best adapts to their business idea.

TECH students represent more than 200 different nationalities.

TECH strives for excellence and, to this end, boasts a series of characteristics that make this university unique:



Analysis

TECH explores the student's critical side, their ability to question things, their problem-solving skills, as well as their interpersonal skills.



Academic Excellence

TECH offers students the best online learning methodology. The university combines the *Relearning* methodology (the most internationally recognized postgraduate learning methodology) with Harvard Business School case studies. A complex balance of traditional and state-of-the-art methods, within the most demanding academic framework.



Economy of Scale

TECH is the world's largest online university. It currently boasts a portfolio of more than 10,000 university postgraduate programs. And in today's new economy, **volume + technology = a groundbreaking price**. This way, TECH ensures that studying is not as expensive for students as it would be at another university.



Learn with the best

In the classroom, TECH's teaching staff discuss how they have achieved success in their companies, working in a real, lively, and dynamic context. Teachers who are fully committed to offering a quality specialization that will allow students to advance in their career and stand out in the business world.

Teachers representing 20 different nationalities.



At TECH, you will have access to the most rigorous and up-to-date case analyses in academia"

03

Why Our Program?

Studying this TECH program means increasing the chances of achieving professional success in senior business management.

It is a challenge that demands effort and dedication, but it opens the door to a promising future. Students will learn from the best teaching staff and with the most flexible and innovative educational methodology.



“

We have highly qualified teachers and the most complete syllabus on the market, which allows us to offer you education of the highest academic level”

This program will provide you with a multitude of professional and personal advantages, among which we highlight the following:

01

A Strong Boost to Your Career

By studying at TECH, students will be able to take control of their future and develop their full potential. By completing this program, students will acquire the skills required to make a positive change in their career in a short period of time.

70% of students achieve positive career development in less than 2 years.

02

Develop a strategic and global vision of the company

TECH offers an in-depth overview of general management to understand how each decision affects each of the company's different functional fields.

Our global vision of companies will improve your strategic vision.

03

Consolidate the student's senior management skills

Studying at TECH means opening the doors to a wide range of professional opportunities for students to position themselves as senior executives, with a broad vision of the international environment.

You will work on more than 100 real senior management cases.

04

You will take on new responsibilities

The program will cover the latest trends, advances and strategies, so that students can carry out their professional work in a changing environment.

45% of graduates are promoted internally.

05

Access to a powerful network of contacts

TECH connects its students to maximize opportunities. Students with the same concerns and desire to grow. Therefore, partnerships, customers or suppliers can be shared.

You will find a network of contacts that will be instrumental for professional development.

06

Thoroughly develop business projects

Students will acquire a deep strategic vision that will help them develop their own project, taking into account the different fields in companies.

20% of our students develop their own business idea.

07

Improve soft skills and management skills

TECH helps students apply and develop the knowledge they have acquired, while improving their interpersonal skills in order to become leaders who make a difference.

Improve your communication and leadership skills and enhance your career.

08

You will be part of an exclusive community

Students will be part of a community of elite executives, large companies, renowned institutions, and qualified teachers from the most prestigious universities in the world: the TECH Technological University community.

We give you the opportunity to study with a team of world-renowned teachers.

04

Objectives

TECH has designed this Postgraduate Certificate with the objective of guiding the graduate on their way to becoming a highly qualified and consolidated leader in the field of Telemedicine and massive clinical data processing. To this end, it will provide not only the best academic tools, but also the most exhaustive and up-to-date syllabus and the support of a teaching staff well versed in the area.



“

If your goal is to determine the applications of computation and its implication in bioinformatics, with this Postgraduate Certificate you will achieve it in less than 150 hours”

TECH makes the goals of their students their own goals too.
Working together to achieve them.

The Postgraduate Certificate in Big Data in Medicine: Massive Medical Data Processing will enable students to:

01

Gain specialized knowledge of massive data acquisition techniques in biomedicine

04

Provide ways of interpreting results from massive data analysis

02

Analyze the importance of data preprocessing in Big Data

03

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

05

Examine the applications and future trends in the field of Big Data in biomedical research and public health



06

Develop key concepts of medicine that serve as a vehicle to understand clinical medicine

08

Determine how to obtain metrics and tools for healthcare management



07

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

09

Understand the basics of basic and translational scientific methodology

10

Examine the ethical and best practice principles governing the different types of research in health sciences

05

Structure and Content

For the design of this program, TECH has used the prestigious and effective pedagogical methodology of Relearning, in which this university is a pioneer. The most important concepts are reiterated throughout the syllabus. In addition, this strategy also places special emphasis on the resolution of simulations and real case studies. In this way, it is possible to offer a program in which the acquisition of knowledge occurs gradually and naturally, without the need to invest extra hours in memorizing.



“

You will master clustering algorithms in omics techniques through extensive work with enrichment repositories such as Gene Ontology and KEG”

Syllabus

For the development of the syllabus of this Postgraduate Certificate in Big Data in Medicine: Massive Medical Data Processing, TECH has taken into consideration the criteria of the teaching staff, which has worked to shape a dynamic and comprehensive syllabus based on the latest developments in the area of Telemedicine and Computer Engineering.

This is a 150-hour program with the best theoretical, practical and additional content, which also includes a multitude of case studies. In this way, during the 6 weeks in which it is developed, the graduate will be able, in addition to updating, to work on the improvement of their professional skills and competences.

It is, therefore, a unique opportunity to become the manager that today's companies are looking for, through an austere and dynamic specialization thanks to which they will master all aspects related to database management, information processing, structural and functional genomics, enrichment and clustering techniques...

This Postgraduate Certificate in is developed over 6 weeks and is divided into 1 module:

Module 1

Big Data in Medicine: Massive Medical Data Processing



Where, When and How is it Taught?

TECH offers the possibility of developing this Postgraduate Certificate in Big Data in Medicine: Massive Medical Data Processing completely online. During the 6 weeks of the specialization, the student will be able to access all the contents of this program at any time, which will allow the students to self-manage their study time.

A unique, key, and decisive educational experience to boost your professional development and make the definitive leap.

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-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 Chromatin 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



“

A perfect academic option to learn in detail about the different applications of Big Data in public health and the associated business possibilities”

06

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"

TECH Business School uses the 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”



This program prepares you to face business challenges in uncertain environments and achieve business success.



A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch to present executives with challenges and business decisions at the highest level, whether at the national or international level. 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 business reality is taken into account.

“

You will learn, through collaborative activities and real cases, how to solve complex situations in real business environments”

The case method has been the most widely used learning system among the world's leading business schools for as long as they have existed. 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 we face in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They must integrate all their knowledge, research, argue and defend their ideas and decisions.

Our program prepares you to face new challenges in uncertain environments and achieve success in your career.

Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

Our online system will allow you to organize your time and learning pace, adapting it to your schedule. You will be able to access the contents from any device with an internet connection.

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 online business school is the only one in the world licensed to incorporate 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.





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.

With this methodology we have 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, markets, and financial 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 specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to 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.



Management Skills Exercises

They will carry out activities to develop specific executive competencies in each thematic area. Practices and dynamics to acquire and develop the skills and abilities that a high-level manager needs to develop in the context of the globalization we live in.



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.





Case Studies

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 senior management 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.



07

Our Students' Profiles

The Postgraduate Certificate in Big Data in Medicine: Massive Medical Data Processing is aimed at graduates, postgraduates and university graduates who have previously completed any of the following programs in the fields of Social and Legal Sciences, Administration and Economics.

This program uses a multidisciplinary approach as the students have a diverse set of academic profiles and represent multiple nationalities.

The Postgraduate Certificate may also be taken by professionals who, being university graduates in any area, have two years of work experience in the field of Bioinformatics and Telemedicine.





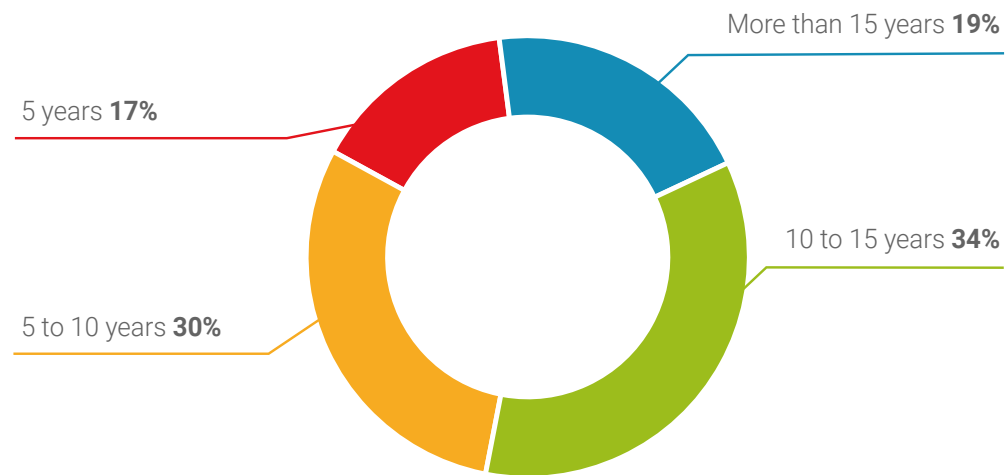
“

Whatever your academic profile is, the important thing is that you are looking for a program that will allow you to progress in your professional career”

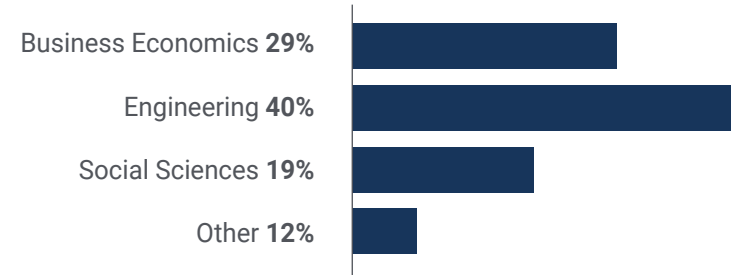
Average Age

Between **35** and **45** years old

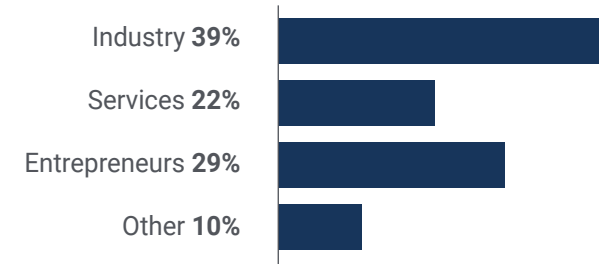
Years of Experience



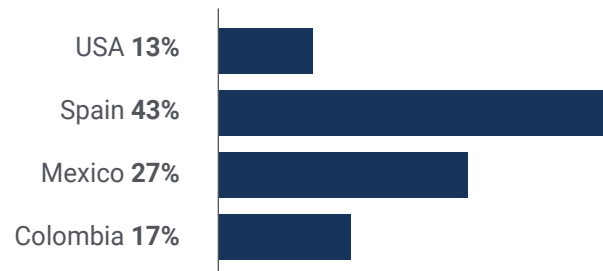
Training



Educational Profile



Geographical Distribution



Silvia Doblado

Chief Data Officer

"I finished my university studies 4 years ago and after getting a position as a data manager in an important Telemedicine company, I was looking for a program that would give me what I needed to try to progress. It was then that TECH was recommended to me and I found this Postgraduate Certificate, thanks to which I was able to not only expand my knowledge, but also to perfect my skills in the successful management of projects related to Big Data. After demonstrating what I was capable of, I got the promotion I had long been looking for, and it was all motivated by this program"

08

Course Management

TECH designs its programs always trying to include the best teaching staff. This program has been no exception, so that the graduate who accesses it will be tutored by a group of professionals in Engineering and Biotechnology with a wide and extensive career. In addition, they are active specialists, so they know in detail the latest strategies and techniques that are obtaining the best results in the Telemedicine business sector.



A black and white photograph showing three people from a different perspective, looking down at a screen. The image is partially obscured by a dark blue diagonal shape that covers the top right and bottom right portions of the page.

“

You will be able to learn from professionals versed in the management of projects related to massive data processing in medicine”

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



09

Impact on Your Career

Including this Postgraduate Certificate in the graduate's resume will serve as a distinctive asset to stand out in any personnel selection process, being able to demonstrate that they have the most up-to-date and comprehensive knowledge on the management of Big Data in the massive processing of medical information. In addition, they will acquire a series of professional skills that will guarantee the success of any project they may undertake.



“

A dynamic, attractive and highly educational option thanks to which you will be able to project your professional future towards more relevant companies within the Telemedicine sector”

Are you ready to take the leap? Excellent professional development awaits you.

The Postgraduate Certificate in Big Data in Medicine: Massive Medical Data Processing of TECH Technological University is an intensive program that prepares you to face challenges and business decisions in the field of Engineering and Biomedicine. The main objective is to promote your personal and professional growth. Helping you achieve success.

If you want to improve, make a positive change at a professional level and network with the best, then this is the place for you.

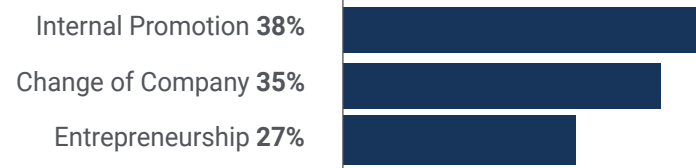
Thanks to the collection of e-Health success stories included in this program, you will be able to work on the mistakes to avoid in order to achieve success with your own.

A program that will increase your chances of earning a considerable higher salary.

Time of Change



Type of Change



Salary Increase

The completion of this program represents a salary increase of more than **28%** for our students.



10

Benefits for Your Company

Any entity that has in its ranks a professional qualified through this Postgraduate Certificate will have the opportunity to elevate their talent, as well as to apply the most innovative and effective business strategies and techniques in the Telemedicine and Big Data sector. The fact is that all graduates who complete this program will benefit from unique and in-depth knowledge, thanks to which they will be able to work in complex situations with guaranteed success.





“

You will be able to expand your portfolio of customers, suppliers and potential partners thanks to the international community of students that TECH brings together in each of its programs”

Developing and retaining talent in companies is the best long-term investment.

01

Growth of talent and intellectual capital

The professional will introduce the company to new concepts, strategies, and perspectives that can bring about significant changes in the organization.

02

Retaining high-potential executives to avoid talent drain

This program strengthens the link between the company and the professional and opens new avenues for professional growth within the company.

03

Building agents of change

You will be able to make decisions in times of uncertainty and crisis, helping the organization overcome obstacles.

04

Increased international expansion possibilities

Thanks to this program, the company will come into contact with the main markets in the world economy.



05

Project Development

The professional can work on a real project or develop new projects in the field of R & D or business development of your company.

06

Increased competitiveness

This program will equip students with the skills to take on new challenges and drive the organization forward.

11

Certificate

The Postgraduate Certificate in Big Data in Medicine: 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: Massive Medical Data Processing** contains the most complete and up-to-date 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: Massive Medical Data Processing**
Official N° of Hours: **150 h.**



*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.



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- » Exams: **online**

Postgraduate Certificate

Big Data in Medicine: Massive Medical Data Processing

