

Postgraduate Certificate

Analysis of Big Data in the Health Sector with Artificial Intelligence



Postgraduate Certificate

Analysis of Big Data in the Health Sector with Artificial Intelligence

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

Website: www.techtute.com/us/medicine/postgraduate-certificate/analysis-big-data-health-sector-artificial-intelligence

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01

Introduction

Data Mining is a procedure that is increasingly used to make appropriate clinical decisions. This tool aims to discover valuable patterns, trends and relationships from large data sets related to patients' health. In this way, physicians can personalize therapeutic treatments according to the individual characteristics of patients based on their genetics, history or responses to previous treatments. In this sense, through these disruptive analytical techniques, specialists optimize procedures and reduce the occurrence of adverse effects. Given the need for experts skilled around these technologies, TECH implements this 100% online university program that will allow physicians to get the most out of Big Data.





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This Postgraduate Certificate will allow you to advance unstoppably in your professional growth as a physician specialized in Big Data and its medical applications”

One of the recent trends in healthcare is the use of Big Data. It is a procedure that is transforming the way medical care is provided, as it serves for the early detection of conditions such as tumors, neurological disorders and even cardiovascular diseases. Therefore, medical personnel use such systems to predict prognoses based on aspects such as genomic data and clinical records of affected individuals. These data are also used in Public Health for the detection of epidemiological outbreaks and the control of infectious diseases such as COVID-19.

In view of this, TECH will provide healthcare professionals with this very complete study on the implications of Big Data in the healthcare field. A disruptive curriculum that will delve deeper into text processing, offering the most advanced methods for retrieving relevant data. In addition, the didactic materials will provide the keys that will allow the practitioner to evaluate the quality of information analysis. In line with this, the program will address different fundamentals of Data Mining and Machine Learning.

On the other hand, the only thing students will need to complete this academic itinerary will be an electronic device with an Internet connection. In this way, they will have access to exclusive and rigorous didactic material, without being bound by hermetic schedules or inflexible evaluation chronograms. At the same time, the program will have an unparalleled teaching methodology: Relearning. With this innovative system, of which TECH is a pioneer, it will be possible the global assimilation of the contents through the gradual reiteration of key concepts. In addition to all this, the analysis of case studies will enable the graduate to acquire knowledge based on real experiences and the latest scientific evidence.

This **Postgraduate Certificate in Analysis of Big Data in the Health Sector with Artificial Intelligence** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ Development of case studies presented by experts in Artificial Intelligence in Clinical Practice
- ♦ The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable for professional practice
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



You will delve into the collection and preprocessing of medical data to facilitate the interpretation of clinical outcomes”

“

Looking to perform quality medical assessments, employing Big Data techniques? Get it through this 6-week program!”

The program's teaching staff includes professionals from the sector who contribute their work experience to this specializing 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 during the course. For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.

You will master the most advanced methods to retrieve valuable data and information about your patients after this Postgraduate Certificate.

Thanks to the Relearning system used by TECH you will reduce the long hours of study and memorization.



02 Objectives

Through this university program, students will acquire solid knowledge for the acquisition, filtering and preprocessing of medical data. Graduates will stand out for having a clinical prism based on quality and integrity, thus ensuring the security of medical information. In turn, students will master Big Data tools to monitor the spread of infectious diseases in real time. In this way, experts will be able to provide effective responses to epidemics using Artificial Intelligence effectively.



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With TECH you will be highly prepared to solve specific challenges related to data visualization and security of medical information”



General Objectives

- ◆ Understand the theoretical foundations of Artificial Intelligence.
- ◆ Study the different types of data and understand the data lifecycle
- ◆ Evaluate the crucial role of data in the development and implementation of AI solutions
- ◆ Delve into algorithms and complexity to solve specific problems
- ◆ Explore the theoretical basis of neural networks for Deep Learning development
- ◆ Analyze bio-inspired computing and its relevance in the development of intelligent systems
- ◆ Analyze current strategies of Artificial Intelligence in various fields, identifying opportunities and challenges
- ◆ Critically evaluate the benefits and limitations of AI in healthcare, identifying potential pitfalls and providing an informed assessment of its clinical application
- ◆ Recognize the importance of collaboration across disciplines to develop effective AI solutions
- ◆ Gain a comprehensive perspective of emerging trends and technological innovations in AI applied to healthcare
- ◆ Acquire solid knowledge in medical data acquisition, filtering, and preprocessing
- ◆ Understand the ethical principles and legal regulations applicable to the implementation of AI in medicine, promoting ethical practices, fairness, and transparency





Specific Objectives

- ◆ Acquire a solid understanding of medical data collection, filtering, and preprocessing
- ◆ Develop a clinical approach based on data quality and integrity in the context of privacy regulations
- ◆ Apply the acquired knowledge in use cases and practical applications, enabling to understand and solve industry-specific challenges, from text analytics to data visualization and medical information security
- ◆ Define Big Data techniques specific to the healthcare sector, including the application of machine learning algorithms for analytics
- ◆ Employ Big Data procedures to track and monitor the spread of infectious diseases in real time for effective response to epidemics



TECH's learning system follows the highest international quality standards, to guarantee you immediate progress in your career"

03

Course Management

For the delivery of this program, TECH has selected the best specialists in Big Data in the healthcare sector. This faculty is composed of professionals with an extensive background, forged in hospitals of national prestige. Each member of the team brings deep and up-to-date clinical experience, ensuring that students receive the highest quality preparation backed by the latest advances in machine learning. The meticulous choice of this faculty ensures an eminently practical and specialized perspective that will enrich the learning experience of healthcare professionals.





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The teaching team of this university program has an extensive research background in Big Data applied to the healthcare field”

Management



Dr. Peralta Martín-Palomino, Arturo

- ◆ CEO and CTO at Prometheus Global Solutions
- ◆ CTO at Korporate Technologies
- ◆ CTO at AI Shepherds GmbH
- ◆ Consultant and Strategic Business Advisor at Alliance Medical
- ◆ Director of Design and Development at DocPath
- ◆ PhD in Psychology from the University of Castilla La Mancha
- ◆ PhD in Economics, Business and Finance from the Camilo José Cela University
- ◆ PhD in Psychology from University of Castilla La Mancha
- ◆ Master's Degree in Executive MBA from the Isabel I University
- ◆ Master's Degree in Sales and Marketing Management, Isabel I University
- ◆ Expert Master's Degree in Big Data by Hadoop Training
- ◆ Master's Degree in Advanced Information Technologies from the University of Castilla La Mancha
- ◆ Member of: SMILE Research Group



Mr. Martín-Palomino Sahagún, Fernando

- Telecommunications Engineer
- Chief Technology Officer and R+D+i Director at AURA Diagnostics (medTech)
- Business Development at SARLIN
- Chief Operating Officer at Alliance Diagnostics
- Chief Innovation Officer at Alliance Medical
- Chief Information Officer at Alliance Medical
- Field Engineer & Project Management in Digital Radiology at Kodak
- MBA from Polytechnic University of Madrid
- Executive Master's Degree in Marketing and Sales at ESADE
- Telecommunications Engineer from the University Alfonso X El Sabio

Professors

Dr. Carrasco González, Ramón Alberto

- ♦ Specialist in Computer Science and Artificial Intelligence
- ♦ Researcher
- ♦ Head of Business Intelligence (Marketing) at the Caja General de Ahorros de Granada and Banco Mare Nostrum
- ♦ Head of Information Systems (Data Warehousing and Business Intelligence) at Caja General de Ahorros de Granada and Banco Mare Nostrum.
- ♦ Doctor in Artificial Intelligence by the University of Granada
- ♦ Higher Engineering Degree in Computer Science from the University of Granada

Mr. Popescu Radu, Daniel Vasile

- ♦ Pharmacology, Nutrition and Diet Specialist
- ♦ Freelance Producer of Teaching and Scientific Content
- ♦ Nutritionist and Community Dietitian
- ♦ Community Pharmacist
- ♦ Researcher
- ♦ Master's Degree in Nutrition and Health at the Open University of Catalonia
- ♦ Master's Degree in Psychopharmacology from the University of Valencia
- ♦ Pharmacist from the Complutense University of Madrid
- ♦ Nutritionist-Dietitian by the European University Miguel de Cervantes





“ Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice ”

04

Structure and Content

This Postgraduate Certificate will provide students with a comprehensive perspective on the application of advanced Big Data techniques for data analysis in the healthcare sector. The syllabus will delve into its essential concepts to gather information efficiently. Likewise, the syllabus will provide the most advanced methods for the recovery of materials, based on data mining and machine learning. Moreover, the didactic contents will address emerging areas together with key aspects such as regulations. The program will also study real case studies to bring the training development closer to clinical practice.

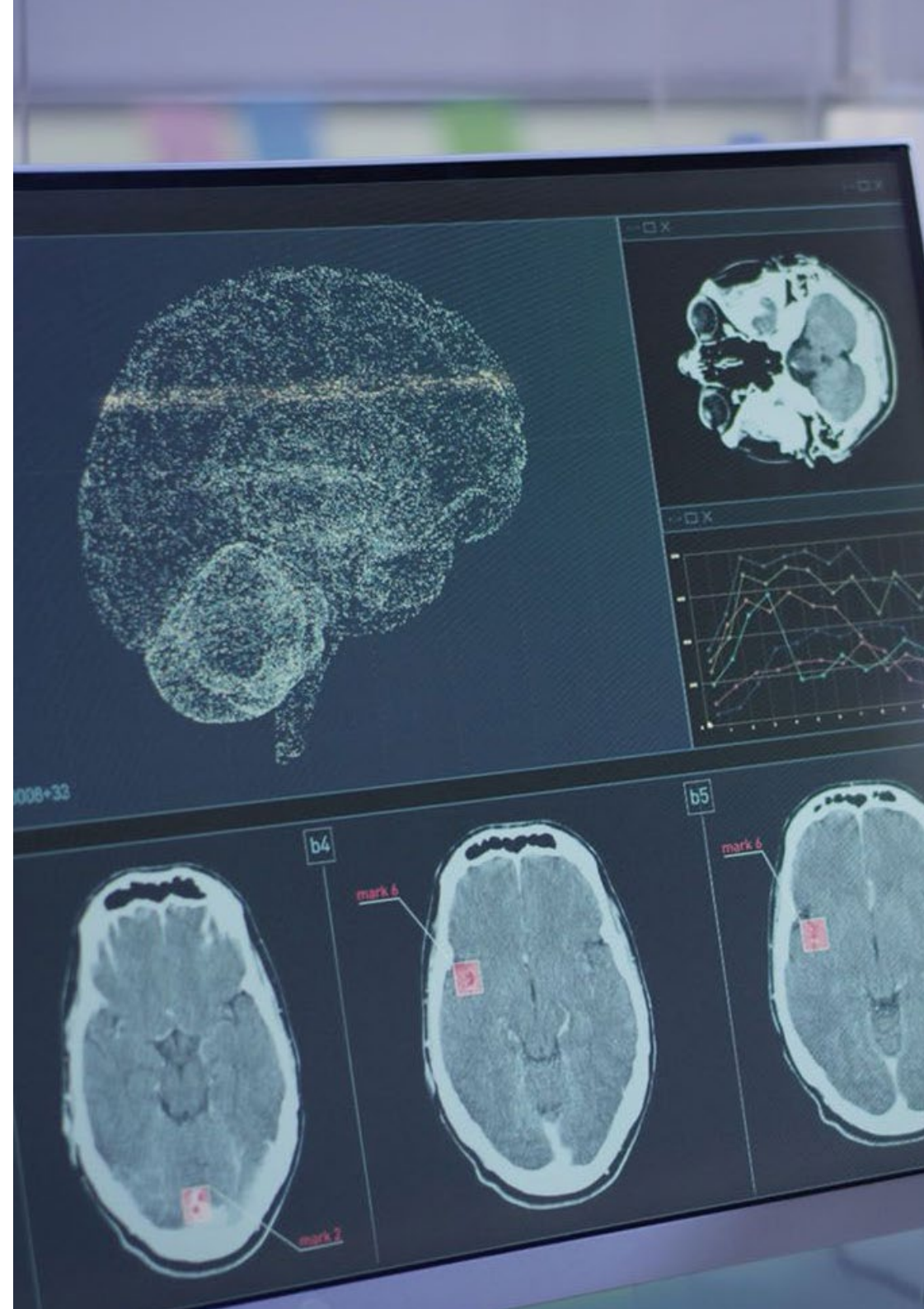


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You will master the most advanced Big Data techniques in the healthcare sector, including Machine Learning Algorithms, thanks to this innovative program”

Module 1. Analysis of Big Data in the Health Sector with AI

- 1.1. Fundamentals of Big Data in Healthcare
 - 1.1.1. The Explosion of Data in the Field of Health
 - 1.1.2. Concept of Big Data and Main Tools
 - 1.1.3. Applications of Big Data in Health
- 1.2. Text Processing and Analysis in Health Data with KNIME and Python
 - 1.2.1. Concepts of Natural Language Processing
 - 1.2.2. Embedding Techniques
 - 1.2.3. Application of Natural Language Processing in Health
- 1.3. Advanced Methods for Data Retrieval in Health with KNIME and Python
 - 1.3.1. Exploring Innovative Techniques for Efficient Health Data Retrieval
 - 1.3.2. Developing Advanced Strategies for Extracting and Organizing Information in Health Settings
 - 1.3.3. Implementing Adaptive and Customized Data Retrieval Methods for Diverse Clinical Contexts
- 1.4. Quality Assessment in Health Data Analysis with KNIME and Python
 - 1.4.1. Developing Indicators for the Rigorous Assessment of Data Quality in Health Care Settings
 - 1.4.2. Implementing Tools and Protocols to Ensure the Quality of Data Used in Clinical Analyses
 - 1.4.3. Continuous Assessment of Accuracy and Reliability of Results in Health Data Analysis Projects
- 1.5. Data Mining and Machine Learning in Health with KNIME and Python
 - 1.5.1. Main Methodologies for Data Mining
 - 1.5.2. Health Data Integration
 - 1.5.3. Detection of Patterns and Anomalies in Health Data
- 1.6. Innovative Areas of Big Data and AI in Healthcare
 - 1.6.1. Exploring New Frontiers in the Application of Big Data and AI to Transform the Healthcare Sector
 - 1.6.2. Identifying Innovative Opportunities for the Integration of Big Data and AI Technologies in Medical Practices
 - 1.6.3. Developing Cutting-Edge Approaches to Maximize the Potential of Big Data and AI in Healthcare



- 1.7. Medical Data Collection and Pre-Processing with KNIME and Python
 - 1.7.1. Developing Efficient Methodologies for Medical Data Collection in Clinical and Research Settings
 - 1.7.2. Implementing Advanced Pre-Processing Techniques to Optimize the Quality and Utility of Medical Data
 - 1.7.3. Designing Collection and Pre-Processing Strategies to Ensure Confidentiality and Privacy of Medical Information
- 1.8. Data Visualization and Communication in Healthcare with PowerBI and Python-like Tools
 - 1.8.1. Designing Innovative Visualization Tools in Health
 - 1.8.2. Creative Communication Strategies in Health
 - 1.8.3. Integrating Interactive Technologies in Health
- 1.9. Data Security and Governance in the Health Sector
 - 1.9.1. Developing Comprehensive Data Security Strategies to Protect Confidentiality and Privacy in the Health Care Sector
 - 1.9.2. Implementing Effective Governance Frameworks to Ensure Ethical and Responsible Data Management in Medical Settings
 - 1.9.3. Designing Policies and Procedures to Ensure the Integrity and Availability of Medical Data, Addressing Challenges Specific to the Health Sector
- 1.10. Practical Applications of Big Data in Healthcare
 - 1.10.1. Developing Specialized Solutions to Manage and Analyze Large Datasets in Healthcare Settings
 - 1.10.2. Using Practical Big Data-Based Tools to Support Clinical Decision-Making
 - 1.10.3. Application of Innovative Big Data Approaches to Address Specific Challenges within the Healthcare Sector

“Access a world-class educational experience that will elevate your professional horizons. Enroll now!”

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.



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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.

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Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



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

Professionals will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.



At the forefront of world teaching, the 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 trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

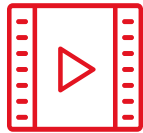
Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

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 applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



Interactive Summaries

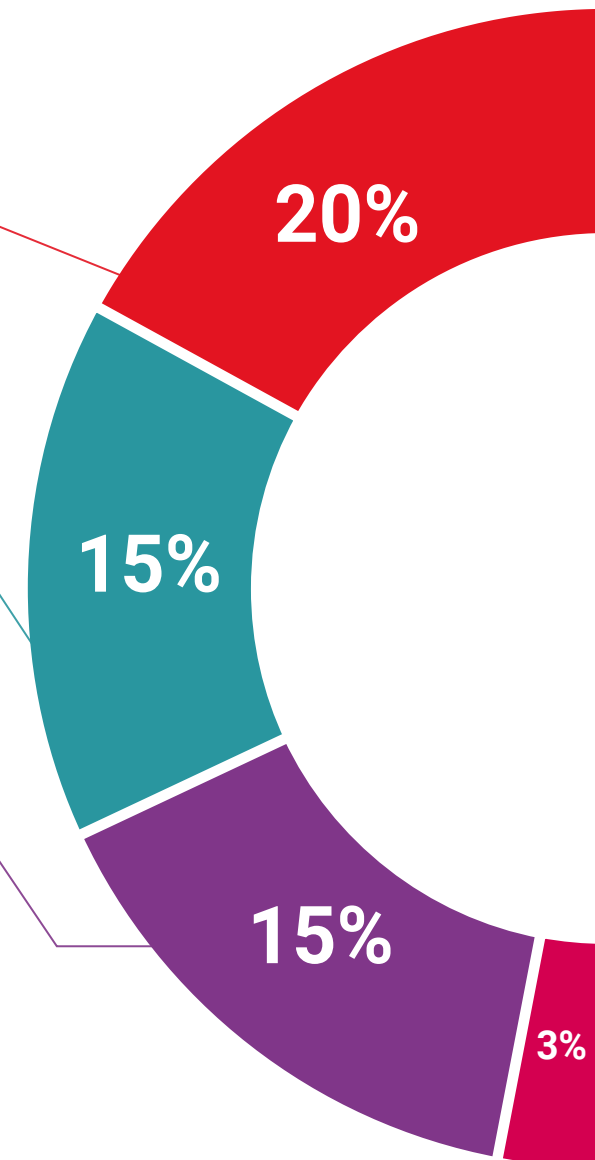
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

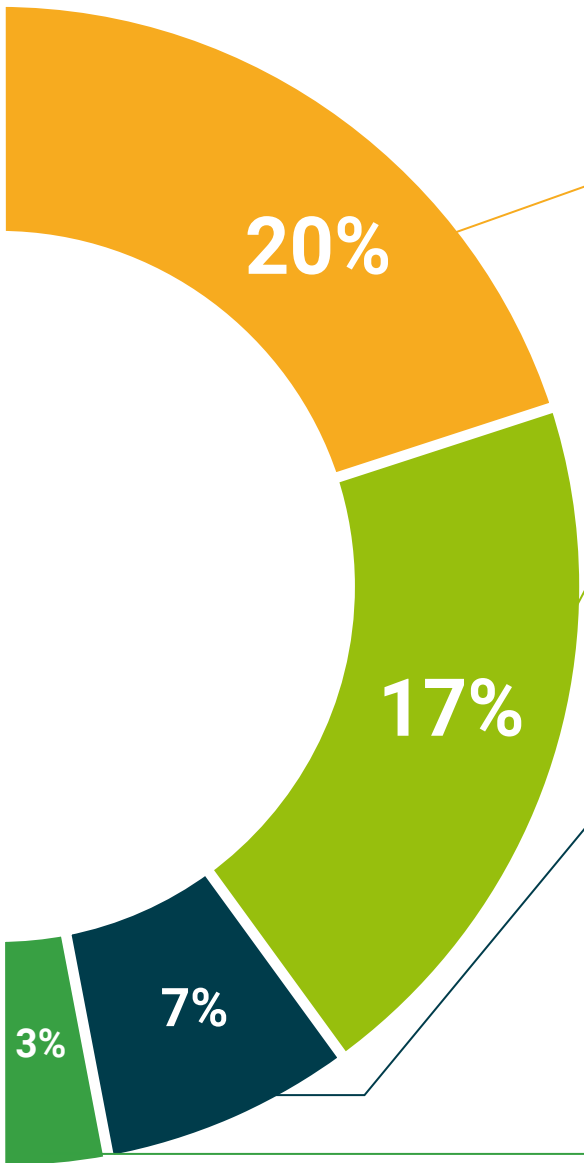
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



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 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 Analysis of Big Data in the Health Sector with Artificial Intelligence guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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

This private qualification will allow you to obtain a **Postgraduate Certificate in Analysis of Big Data in the Health Sector with Artificial Intelligence** endorsed by **TECH Global University**, the largest digital university in the world.

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** private qualification, 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 Analysis of Big Data in the Health Sector with Artificial Intelligence**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



*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.

future
health confidence people
education information tutors
guarantee accreditation teaching
institutions technology learning
community commitment
personalized service innovation
knowledge present
development languages
virtual classroom



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