

# Postgraduate Certificate

## Management and Analysis of Biomedical Information and Scientific Literature with Artificial Intelligence



## Postgraduate Certificate Management and Analysis of Biomedical Information and Scientific Literature with Artificial Intelligence

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

Website: [www.techitute.com/us/artificial-intelligence/postgraduate-certificate/management-analysis-biomedical-information-scientific-literature-artificial-intelligence](http://www.techitute.com/us/artificial-intelligence/postgraduate-certificate/management-analysis-biomedical-information-scientific-literature-artificial-intelligence)

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01

# Introduction to the Program

Artificial Intelligence has emerged as a key tool for the automated management and analysis of the volume of biomedical information and scientific literature, facilitating the identification of patterns, the extraction of relevant knowledge and informed decision-making. Prestigious institutions such as the National Institutes of Health (NIH) and the European Bioinformatics Institute (EMBL-EBI) have promoted the development of AI models for the screening and validation of biomedical information, optimizing the processes of scientific discovery and validation. In this context, TECH has developed this 100% online Postgraduate Certificate as a unique opportunity to specialize in the use of advanced tools that transform the way knowledge is processed in the health sector.

A close-up photograph of a human eye with a contact lens. The eye is light-colored, and the contact lens is visible on the iris. The image is partially obscured by a diagonal split background of blue and white.

“

*Your future in AI-related research starts at TECH! You will study with the best teachers and a methodology based on Relearning, which guarantees practical and effective results”*



The increasing digitalization of the healthcare sector has generated a massive volume of biomedical data and scientific publications that require efficient and accurate management. In this context, Artificial Intelligence has emerged as a key tool for optimizing the search, analysis, and interpretation of relevant information in the field of health. In this way, its application in the systematic review of literature, the extraction of clinical knowledge and the structuring of biomedical data will allow professionals to improve decision-making and accelerate advances in research.

To respond to this need, TECH has developed the Postgraduate Diploma in Management and Analysis of Biomedical Information and Scientific Literature with Artificial Intelligence, with the aim of providing the most up-to-date knowledge in the use of advanced tools. Throughout the program, topics such as biomedical data mining, natural language processing applied to research and the automated analysis of large volumes of scientific literature will be addressed. In addition, the use of machine learning algorithms for the classification and filtering of relevant information in real time will be explored in depth.

Based on this, graduates will strengthen their profile to stand out in a labor market that demands experts in data analysis and process automation in health. In this way, they will be ready to work in areas such as bioinformatics, epidemiological surveillance or health technology assessment. In addition, they will choose to work in hospitals, research centers, pharmaceutical companies and regulatory bodies.

This program will also be taught completely online, allowing students to organize their studies in a flexible way and without interrupting their daily activities. In turn, the Relearning methodology, based on the strategic reiteration of concepts, will guarantee a progressive and efficient assimilation of the content, facilitating an innovative and high-impact learning experience.

This **Postgraduate Certificate in Management and Analysis of Biomedical Information and Scientific Literature with Artificial Intelligence** contains the most complete and up-to-date program on the market. The most important features include:

- ♦ Development of practical cases presented by experts in Artificial Intelligence
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning
- ♦ Special emphasis on innovative methodologies in the Management and Analysis of Biomedical Information and Scientific Literature with Artificial Intelligence
- ♦ 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



*With the flexibility of a 100% online program and a completely up-to-date syllabus, you will prepare to lead in a key field in the healthcare sector and Artificial Intelligence"*

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*TECH will guarantee you dynamic and progressive learning that will boost your professional career. With an innovative approach, you will prepare to excel in a key sector. Enroll now and master Biomedical Engineering related to Artificial Intelligence!”*

Its teaching staff includes professionals from the field of Artificial Intelligence, who bring their work experience to this program, as well as renowned specialists from leading companies 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 an immersive learning experience designed to prepare for real-life situations.

This program is designed around Problem-Based Learning, whereby the student must try to solve the different professional practice situations that arise throughout the program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Do you want to make informed decisions based on evidence from data management with Artificial Intelligence? This qualification will fulfill your purposes and will propel you to excel in the personalization of treatments at a global level.*

*With this Postgraduate Certificate you will acquire knowledge and skills in a more effective and fluid way! Thanks to the Relearning methodology, you will experience a more dynamic and interactive learning approach.*



02

# Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it relies on an enormous faculty of more than 6,000 professors of the highest international renown.





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*Study at the world's largest online university  
and guarantee your professional success.  
The future starts at TECH”*

### The world's best online university, according to FORBES

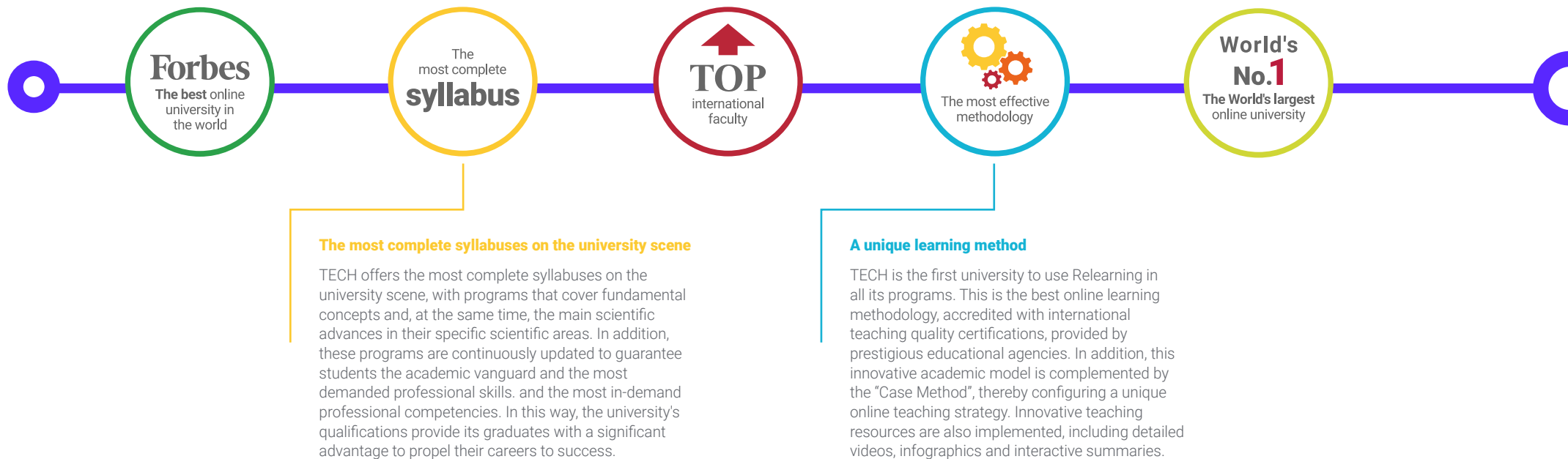
The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".

### The best top international faculty

TECH's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistumba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

### The world's largest online university

TECH is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in ten different languages, making us the largest educational institution in the world.



#### The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

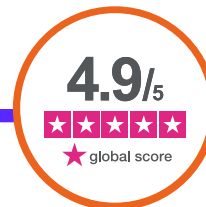
#### Leaders in employability

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.



#### Google Premier Partner

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.



#### The top-rated university by its students

Students have positioned TECH as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.



# 03 Syllabus

Through a specialized syllabus, the program will cover everything from the fundamentals of biomedical data processing to the application of AI models in the extraction and structuring of information. In addition, it will delve into the automation of scientific literature analysis, the use of medical databases such as *PubMed* and *Scopus*, the integration of Big Data in hospital management and the validation of information based on Machine Learning algorithms. Finally, it will delve into the implementation of AI in epidemiological surveillance and the optimization of the systematic search for evidence in clinical trials.





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*If you want to be at the forefront of Artificial Intelligence related to biomedicine, now is the time to take the next step. Join TECH and transform the way the world understands Scientific Literature. You will study 100% online!”*

**Module 1.** Management and Analysis of Biomedical Information and Scientific Literature with Artificial Intelligence

- 1.1. Introduction to the Use of AI for Biomedical Information
  - 1.1.1. Importance of Biomedical Information in Pharmacy
  - 1.1.2. Challenges in the Management and Analysis of the Scientific Literature
  - 1.1.3. Role of AI in the Management of Large Volumes of Scientific Data
  - 1.1.4. Examples of AI Tools such as Semantic Scholar in Biomedical Research
- 1.2. Biomedical Information Retrieval with AI
  - 1.2.1. Advanced Searching Techniques in Scientific Databases
  - 1.2.2. AI Algorithms to Improve Search Accuracy and Relevance
  - 1.2.3. Personalization of Results through Machine Learning
  - 1.2.4. Applications such as PubMed AI for Efficient Information Retrieval
- 1.3. Natural Language Processing (NLP) in Scientific Texts
  - 1.3.1. NLP Applications in the Analysis of Biomedical Literature
  - 1.3.2. Automatic Extraction of Key Information from Scientific Articles
  - 1.3.3. Automatic Summarization and Generation of Structured Abstracts
  - 1.3.4. Tools such as SciBERT for Scientific Text Processing
- 1.4. Biomedical Text Mining
  - 1.4.1. Basic Concepts and Techniques in Text Mining
  - 1.4.2. Identification of Trends and Patterns in Scientific Publications
  - 1.4.3. Extraction of Relationships between Biomedical Entities
  - 1.4.4. Examples such as MEDLINE and Text Mining Library for Text Mining
- 1.5. Ontologies and Semantic Annotations in Biomedicine
  - 1.5.1. The Use and Creation of Ontologies in the Health Sciences
  - 1.5.2. Semantic Annotation of Scientific Documents
  - 1.5.3. AI for Semantic Enrichment and Contextual Searching
  - 1.5.4. Tools such as BioPortal and UMLS for Ontological Management
- 1.6. Scientific Literature Recommender Systems
  - 1.6.1. Recommendation Algorithms in Scientific Platforms
  - 1.6.2. Personalization of Content for Researchers and Practitioners
  - 1.6.3. AI in Predicting Future Relevance and Citations
  - 1.6.4. Applications such as Mendeley Suggest and ResearchGate







- 1.7. Visualization of Biomedical Data and Knowledge
  - 1.7.1. Visualization Techniques for Complex Biomedical Data
  - 1.7.2. Knowledge Maps and Research Networks
  - 1.7.3. AI Tools to Visualize Relationships and Trends
  - 1.7.4. Examples such as VOSviewer and Cytoscape in Scientific Visualization
- 1.8. AI-Assisted Knowledge Discovery
  - 1.8.1. Identification of New Hypotheses from Existing Data
  - 1.8.2. Integration of Multidisciplinary Data with AI
  - 1.8.3. Prediction of Unknown Drug Interactions and Pharmacological Effects
  - 1.8.4. Cases such as IBM Watson Discovery and Elsevier's Entellect
- 1.9. Big Data Management in Biomedical Research
  - 1.9.1. Challenges of Big Data in Biomedical Research
  - 1.9.2. Efficient Storage and Processing of Massive Data
  - 1.9.3. AI for Genomic and Proteomic Data Analysis
  - 1.9.4. Tools such as Apache Hadoop and Spark in Biomedicine
- 1.10. Challenges and Future Perspectives in NLP for Scientific Literature
  - 1.10.1. Specific NLP Challenges in Scientific and Biomedical Data
  - 1.10.2. Limitations in Search and Analysis Automation
  - 1.10.3. Recent Advances in NLP for Biomedical Sciences (BioGPT, BioBERT)
  - 1.10.4. Future Applications of AI in Scientific Research and Publication

“*The combination of flexibility, innovation and effectiveness make this Postgraduate Certificate the ideal choice for professional advancement in the field of biomedical information analysis and Artificial Intelligence*”

04

# Teaching Objectives

The main objective of this Postgraduate Certificate is to provide professionals with the necessary skills to harness the potential of AI in the extraction, organization and validation of relevant medical information. In order to achieve this, the program will cover specialized content ranging from the structuring and management of biomedical databases to the automation of systematic reviews and meta-analysis with advanced algorithms. In this way, graduates will know how to apply AI-based methodologies to optimize access, analysis and use of scientific information, thereby ensuring a positive impact on medical innovation and the quality of healthcare.





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*Thanks to this Postgraduate Certificate, you will manage and analyze large volumes of scientific data with the support of experts and TECH's innovative methodology. Take the next step in your career!”*



## General Objectives

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- Apply artificial intelligence tools in the analysis of biomedical data
- Interpret scientific literature using advanced technologies to extract relevant information
- Optimize the efficient management of large volumes of biomedical data
- Design analysis strategies that integrate artificial intelligence and biomedicine
- Identify patterns and relationships in biomedical data using machine learning techniques
- Improve clinical and research decision making through data analytics
- Implement AI-based solutions to accelerate biomedical research processes
- Integrate scientific and technological knowledge in solving complex biomedical problems





### Specific Objectives

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- Master the use of AI software and tools to process biomedical data and scientific literature
- Analyze scientific studies to identify trends and opportunities in biomedical research
- Design structured databases to facilitate the efficient management of biomedical information
- Implement machine learning algorithms to extract relevant patterns in health data

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# 05 Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.





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*TECH will prepare you to face new challenges in uncertain environments and achieve success in your career”*

## The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.

The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

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*At TECH you will NOT have live classes  
(which you might not be able to attend)”*



### The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

“*TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want*”



## Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.





## Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

*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.*



## A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



*The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule"*

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

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

### The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

*Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.*

*You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.*





As such, the best educational materials, thoroughly prepared, will be available in this program:



#### 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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



#### Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



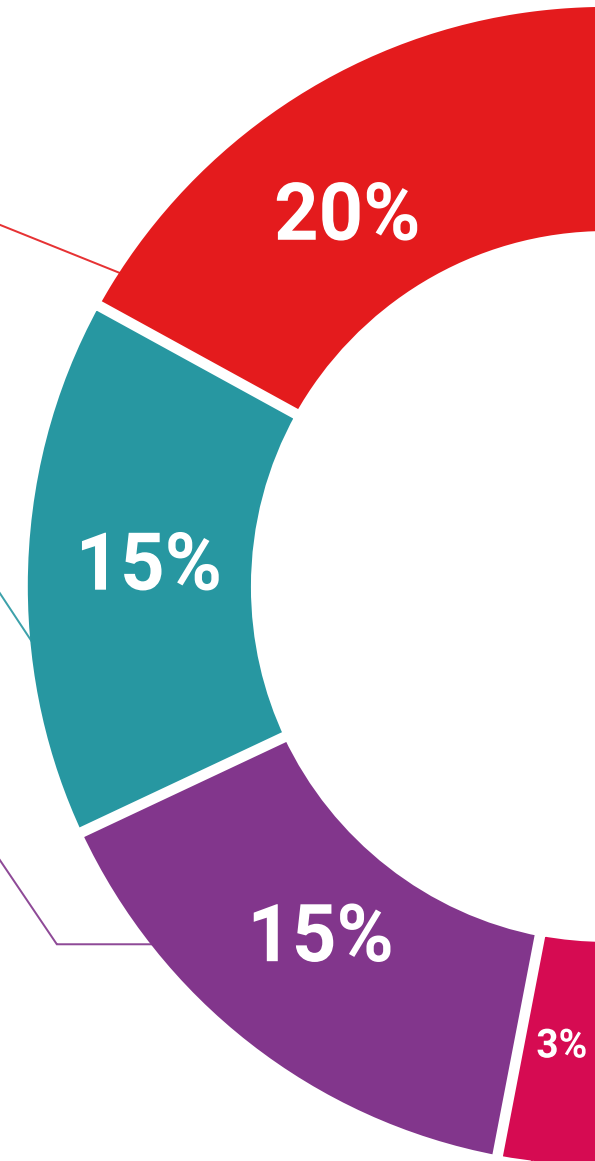
#### Interactive Summaries

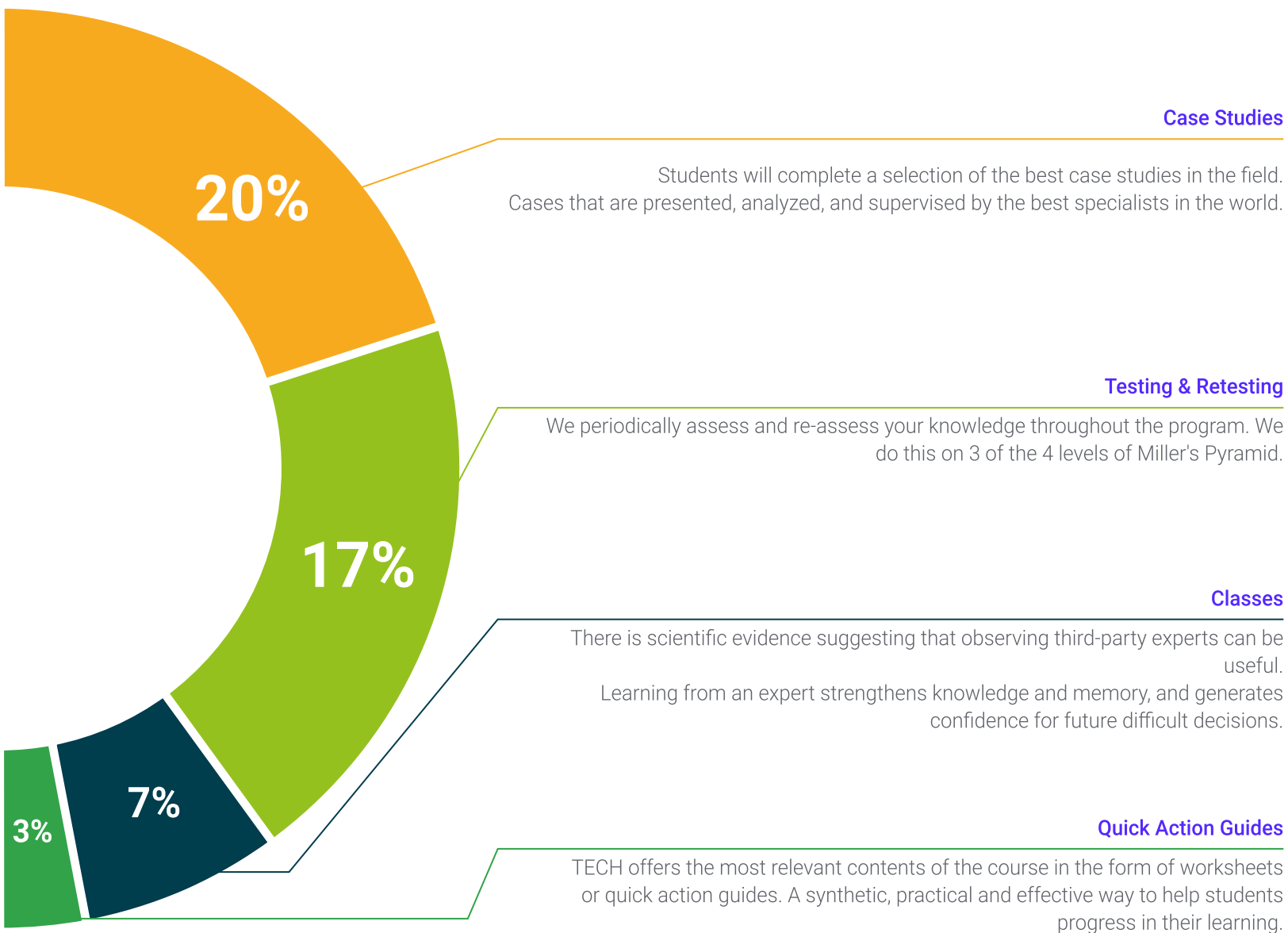
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge. This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.





06

# Teaching Staff

This academic program has a team of top-level specialists, made up of professionals with a solid background in the fields of health, biomedical research and Artificial Intelligence. In fact, these experts combine outstanding academic work with extensive practical experience, which guarantees a learning experience based on the real-life application of the knowledge acquired. Students will be guided by data scientists, bioinformaticians, clinical researchers and health professionals who have worked in renowned institutions.





Segmentkernige Granulozyten	0,0% (0)
Lymphozyten	70,0% (130)
LGL-Zellen	0,0% (0)
Monozyten	0,0% (0)
Eosinophile	0,0% (0)
Basophile	0,0% (0)

Unreife Leukozyten:	
Metamyelozyten	0,0% (0)
Myelozyten	0,0% (0)
Promyelozyten	0,0% (0)
Myeloblasten	0,0% (0)
Blasten	0,0% (0)
Virozyten	0,0% (0)
Plasmazellen	0,0% (0)
Atypische Lymphozyten	0,0% (0)
Promonozyten	0,0% (0)

Erythrozyten, Plättchen, etc.:	
Erythroblasten	0,0% (0)
Plättchen	0,0% (0)
Plättchenaggregate	0,0% (0)
Riesenplättchen	0,0% (0)
Megakaryozytenkerne	0,0% (0)
Kernschatten	0,0% (0)
Defekte Zellen	0,0% (0)

Sonstiges:	
Andere Zellen	0,0% (0)
Artefakte	0,0% (0)
Nicht identifizierbar	0,0% (0)

Erfahren Sie mehr unter  
[www.HemaCAM.org](http://www.HemaCAM.org)

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*This teaching staff of excellence is one of TECH's greatest distinctive features, giving you access to up-to-date, rigorous learning that is in line with the current needs of the sector”*

## Management



### Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometheus Global Solutions
- CTO at Korporate Technologies
- CTO at AI Shephers GmbH
- Consultant and Strategic Business Advisor at Alliance Medical
- Director of Design and Development at DocPath
- PhD in Computer Engineering 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
- Master's Degree in Expert 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





07

# Certificate

The Postgraduate Certificate in Management and Analysis of Biomedical Information and Scientific Literature 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 Management and Analysis of Biomedical Information and Scientific Literature with Artificial Intelligence** 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.

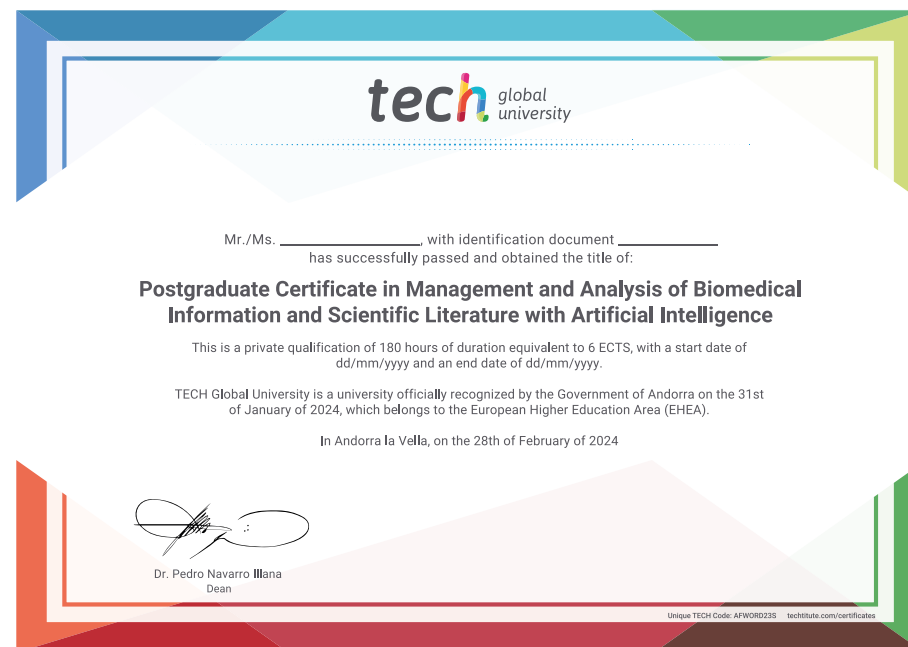
This **TECH Global University** private qualification is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Management and Analysis of Biomedical Information and Scientific Literature with Artificial Intelligence**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**







## Postgraduate Certificate Management and Analysis of Biomedical Information and Scientific Literature with Artificial Intelligence

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