

# Postgraduate Certificate Big Data and Artificial Intelligence





## Postgraduate Certificate Big Data and Artificial Intelligence

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

Website: [www.techtute.com/us/artificial-intelligence/postgraduate-certificate/big-data-artificial-intelligence](http://www.techtute.com/us/artificial-intelligence/postgraduate-certificate/big-data-artificial-intelligence)

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# 01

# Introduction

In a business context characterized by competitiveness, more and more companies are betting on implementing Artificial Intelligence and Big Data in their workflows. The relevance of these systems lies in their ability to transform the way organizations process, analyze and use information to make informed decisions. Likewise, these resources identify market needs through trends, which drives innovation processes based on products or services. Aware of this reality, TECH is launching a university program aimed at professionals who wish to nurture their practice with the most innovative technologies and techniques in both areas. All in a convenient online format which adapts to the agenda of busy experts.



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*TECH's Relearning system will take you through Natural Language Processing, Machine Learning and Data Ingestion in a much more agile way"*

Despite the many opportunities provided by Industry 4.0, experts face challenges such as constant adaptation to an environment subject to constant change. Within the framework of Artificial Intelligence, there have been numerous advances that include innovative techniques ranging from Machine Learning to Deep Learning and Natural Language Processing. Therefore, it is necessary for specialists to stay at the forefront of the latest trends in these fields to ensure a praxis defined by excellence. Otherwise, they could become obsolete in professional terms and their level of competitiveness in the labor market would decrease.

To respond to this need, TECH implements a revolutionary program in Big Data and Artificial Intelligence that offers the most complete and renewed didactic materials. The academic itinerary will delve into the fundamentals of Big Data, and then offer cutting-edge techniques for Data Mining. In this way, students will extract valuable information that will contribute to tasks such as machine translation or sentiment analysis. At the same time, the syllabus will highlight the importance of proper data visualization, which will provide students with specialized tools in this area such as Matplotlib. Likewise, the academic contents will analyze in detail the operation of Deep Learning neural architectures, which will contribute to the Natural Language Processing.

This academic program, completely online, will provide students with the flexibility to take it from anywhere and at any time, with no time restrictions. To do so, students will only need an electronic device with Internet access to access the Virtual Campus. Specialists have a unique opportunity for students to update their skills through a revolutionary Relearning methodology, consisting of the repetition of key concepts to ensure optimal knowledge acquisition.

The **Postgraduate Certificate in Big Data and Artificial Intelligence** contains the most complete and up-to-date program on the market. The most important features include:

- The development of case studies presented by experts in business-oriented technological solutions
- The graphic, schematic, and practical contents with which they are created, provide 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
- 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 develop the most advanced Virtual Assistants and Chatbots to provide quality customer support in real time"*

“

*You will effectively manage the Tableau tool and be able to create powerful visualizations such as dashboards”*

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

*You will delve into the most productive strategies for cleaning and normalizing data extracted from Big Data systems.*

*Updating your knowledge on Machine Learning will be easier thanks to the myriad of multimedia resources provided by this program.*





# 02

# Objectives

Through 150 hours of studying, graduates will stand out for having an extensive knowledge of the advances that have occurred in both Big Data and Artificial Intelligence. Along the same lines, professionals will have a wide range of tools with which they will optimize the visualization of the data obtained. Likewise, they will be highly qualified to develop instruments such as Chatbots or Virtual Assistants, thus improving the experience of consumers and raising the performance of companies.





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*In just 6 weeks, you will have a deep understanding of the functioning and applications of Deep Learning Neural Networks”*



## General Objectives

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- Conduct a comprehensive analysis of the profound transformation and radical paradigm shift being experienced in the current global digitalization process
- Provide in-depth knowledge and the necessary technological tools to face and lead the technological leap and the challenges currently present in companies
- Mastering the digitalization procedures of companies and the automation of their processes to create new fields of wealth in areas such as creativity, innovation and technological efficiency
- Leading Digital Change





## Specific Objectives

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- Delve into the knowledge of the fundamental principles of artificial intelligence
- Master the techniques and tools of this technology (Machine Learning/Deep Learning)
- Obtain a practical knowledge of one of the most widespread applications such as Chatbots and virtual assistants
- Acquire knowledge of the different transversal applications that this technology has in all fields



*Efficiently and practically update all your Big Data knowledge to achieve a distinctive quality boost in your career”*



# 03

# Course Management

In its untiring commitment to maintain the quality of its university programs intact, TECH has brought together the best specialists in Artificial Intelligence and Big Data in this Postgraduate Certificate. These professionals pour into the didactic materials both their solid knowledge in these fields and years of work experience. In this way, students will enjoy a first-class educational experience with the support of experts in these technological fields. In addition, the teaching staff will be available at all times to resolve any doubts that students may have during their learning process.





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*A teaching staff specialized in Artificial Intelligence and Big Data will provide you with a top-quality syllabus to guarantee your professional development”*

## Management



### Mr. Segovia Escobar, Pablo

- ♦ Chief Executive of the Defense Sector in the Company TecnoBit of the Oesía Group
- ♦ Corporate Project Director Indra
- ♦ Master's Degree in Companies Administration and Management by the National University of Distance Education
- ♦ Postgraduate in Strategic Management Function
- ♦ Member of: Spanish Association of People with High Intellectual Quotient



### Dr. Diezma López, Pedro

- ♦ Chief Innovation Officer and CEO of Zerintia Technologies
- ♦ Founder of the technology company Acuilae
- ♦ Member of the Kebala Group for business incubation and promotion
- ♦ Consultant for technology companies such as Endesa, Airbus or Telefónica
- ♦ Wearable "Best Initiative" Award in eHealth 2017 and "Best Technological "Solution" 2018 for occupational safety



## Professors

### Ms. Sánchez López, Cristina

- ◆ CEO and founder of Acuilae
- ◆ Artificial Intelligence consultant at ANHELA IT
- ◆ Creator of Etyka Software for Computer System Security
- ◆ (Software Engineer) for the Accenture Group in large clients such as Bank of Santander, BBVA, Endesa or Barclays Bank
- ◆ Master's Degree in Data Science at KSchool
- ◆ Degree in Statistics from the Complutense University Madrid

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*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

Thanks to this program, students will acquire a solid understanding of the technical principles underlying Big Data and Artificial Intelligence, while enhancing their programming skills. The curriculum will delve into the use of advanced tools for Data Mining and Data Warehousing. In this way, graduates will extract valuable knowledge through large amounts of data, making informed decisions. In addition, the syllabus will provide the keys to the use of tools such as Python for the correct visualization of data. The program will also focus on Deep Learning, in view of its capacity to learn hierarchical representations of data.







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*A comprehensive education that will provide you with the latest technologies and trends in the fields of Big Data and Artificial Intelligence”*

## Module 1. Big Data and Artificial Intelligence

- 1.1. Fundamental Principles of Big Data
  - 1.1.1. Big Data
  - 1.1.2. Tools to Work With Big Data
- 1.2. Data Mining and Warehousing
  - 1.2.1. Data Mining Cleaning and Standardization
  - 1.2.2. Information Extraction, Machine Translation, Sentiment Analysis, etc
  - 1.2.3. Types of Data Storage
- 1.3. Data Intake Applications
  - 1.3.1. Principles of Data intake
  - 1.3.2. Data Ingestion Technologies to Serve Business Needs
- 1.4. Data Visualization
  - 1.4.1. The Importance of Data Visualization
  - 1.4.2. Tools to Carry It Out Tableau, D3, matplotlib (Python), Shiny®
- 1.5. Machine Learning
  - 1.5.1. Understanding Machine Learning
  - 1.5.2. Supervised and Unsupervised Learning
  - 1.5.3. Types of Algorithms
- 1.6. Neural Networks (Deep Learning)
  - 1.6.1. Neural Network: Parts and Operation
  - 1.6.2. Types of Networks CNN, RNN
  - 1.6.3. Applications of Neural Networks; Image Recognition and Natural Language Interpretation
  - 1.6.4. Generative Text Networks: LSTM
- 1.7. Natural Language Recognition
  - 1.7.1. PLN (Processing Natural Language)
  - 1.7.2. Advanced PLN Techniques: Word2vec, Doc2vec





- 1.8. Chatbots and Virtual Assistants
  - 1.8.1. Types of Assistants: Voice and Text Assistants
  - 1.8.2. Fundamental Parts for the Development of an Assistant: Intents, Entities and Dialogue Flow
  - 1.8.3. Integrations: Web, Slack, WhatsApp, Facebook
  - 1.8.4. Assistant Development Tools: Dialogflow, Watson Assistant
- 1.9. Emotions, Creativity and Personality in IA
  - 1.9.1. Understand How to Detect Emotions Using Algorithms
  - 1.9.2. Creating a Personality: Language, Expressions and Content
- 1.10. Future of Artificial Intelligence
- 1.11. Reflections

“Are you looking for a degree that adapts to your schedule and does not force you to travel unnecessarily? This Postgraduate Certificate will allow you to effectively self-manage your learning process”

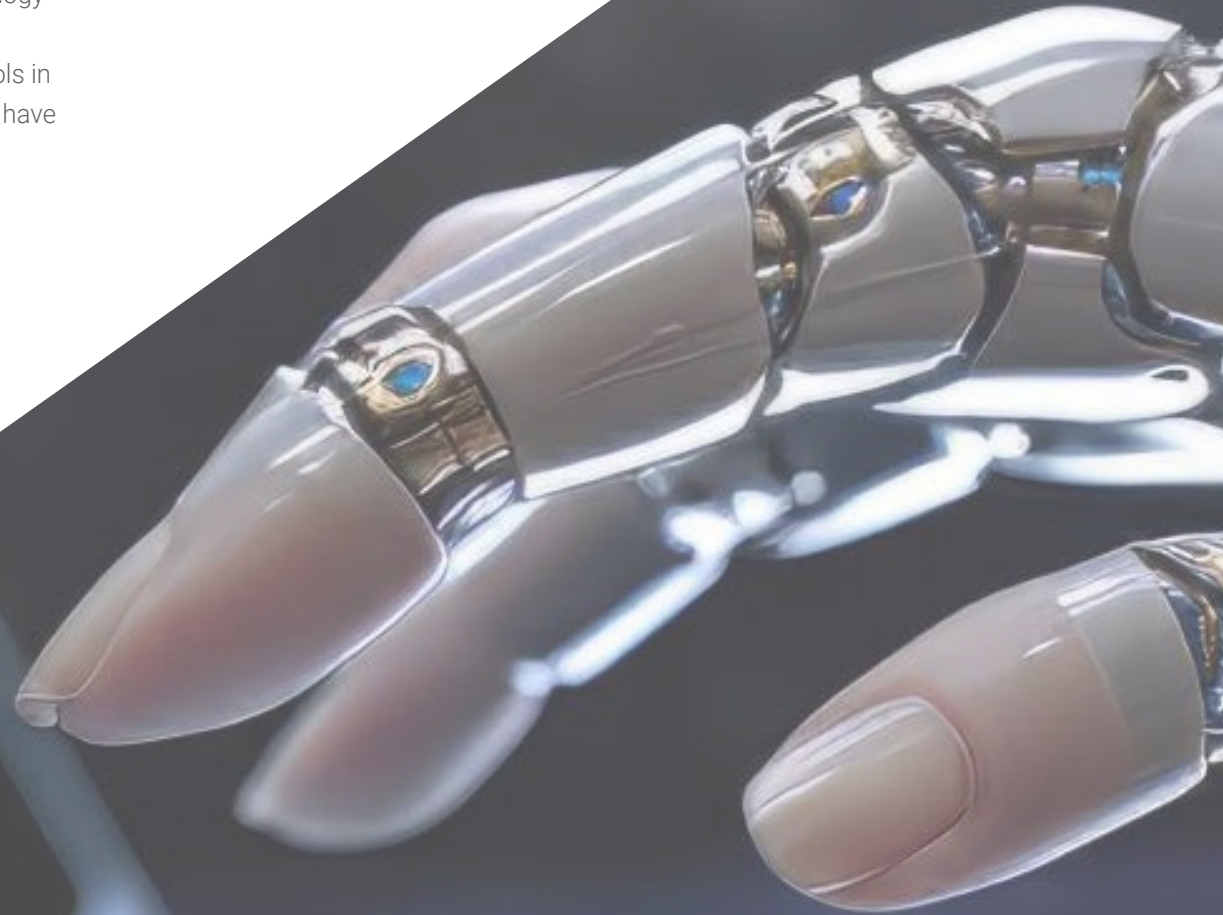


05

# 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"*

## 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.

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*At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world”*



*You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.*



*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

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

The case method has been the most widely used learning system among the world's leading Information Technology 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 that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

## 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.

*In 2019, we obtained the best learning results of all online universities in the world.*

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.





In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

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



### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



### Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





#### 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 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.





06

# Certificate

The Postgraduate Certificate in Big Data and Artificial Intelligence guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.







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

This **Postgraduate Certificate in Big Data and Artificial Intelligence** 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 diploma 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 and Artificial Intelligence**

Official N° of Hours: **150 h.**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.



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- » Certificate: **TECH Technological University**
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- » Exams: **online**

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