# Postgraduate Certificate

## Large Scale Financial Data Processing

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# Postgraduate Certificate
## Large Scale Financial Data Processing

- Modality: **online**
- Duration: **6 weeks**
- Certificate: **TECH Technological University**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/artificial-intelligence/postgraduate-certificate/large-scale-financial-data-processing**

# Index

01

# Introduction

Large-scale financial data processing has become strategically important due to the rise of Artificial Intelligence and Machine Learning in the management of large volumes of financial information. In fact, financial institutions use advanced algorithms to analyze millions of transactions in real time, detect fraud, manage risks and optimize investment portfolios. In addition, technologies such as Blockchain have increased transparency and security in the management of financial data. In this context, TECH has developed a completely virtual program that will fit perfectly into the work and personal schedules of graduates, using the innovative learning methodology known as Relearning.

*With this 100% online Postgraduate Certificate, you will equip yourself with skills in real-time data processing, responding quickly to market fluctuations and contributing to business strategy"*

Large-scale financial data processing has gained strategic importance due to the rise of Artificial Intelligence. In addition, the growing adoption of fintech and the integration of Big Data enable industry players to make more informed, faster and more efficient decisions in a globalized and digital environment.

This is how this Postgraduate Certificate was created, in which Big Data technologies, such as Hadoop and Spark, fundamental for the storage and processing of large volumes of financial data, will be mastered. In addition, theoretical and practical aspects will be addressed that will help professionals understand how these platforms can transform data into valuable information, facilitating the development of effective strategies in the financial field.

Technologies will also be used to provide quick and effective responses to market fluctuations, which is crucial in a rapidly changing financial environment. And, through case studies and simulations, experts will acquire the ability to analyze data in real time, enabling them to make informed and strategic decisions that positively impact the profitability and competitiveness of organizations.

Finally, they will delve into industry standards and regulations governing the handling of sensitive information, ensuring compliance with the necessary regulations to protect the integrity of the data. In turn, this will include the implementation of cybersecurity measures and encryption techniques, as well as the development of effective privacy policies.

In this way, TECH has created a comprehensive, fully online program, which only requires an electronic device with an Internet connection to access all educational materials. This solves inconveniences such as the need to move to a physical location and the obligation to follow a fixed schedule. Additionally, it will be based on the revolutionary Relearning methodology, focused on the repetition of essential concepts to ensure a correct understanding of the contents.

This **Postgraduate Certificate in Large Scale Financial Data Processing** 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 Artificial Intelligence applied to Stock Exchanges and Financial Markets
- 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 self-assessment can be used 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 focus on data security and privacy, ensuring a thorough understanding of industry regulations for working in regulated environments, and fostering confidence in handling of sensitive information"*

*You will prepare you to analyze and process large-scale financial data ethically and responsibly, ensuring customer trust and regulatory compliance. With all the TECH quality guarantees!"*

*You will master Big Data technologies, such as Hadoop and Spark, which enable the efficient storage and processing of large volumes of financial data, optimizing your analysis capacity and decision making.*

*You will acquire knowledge in real-time data architectures, as well as in the use of streaming technologies, developing solutions that analyze data as it is generated. What are you waiting for to enroll?*

The program's teaching staff includes professionals from the field who contribute their work experience to this educational 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 experts in the field of educational coaching with extensive experience.

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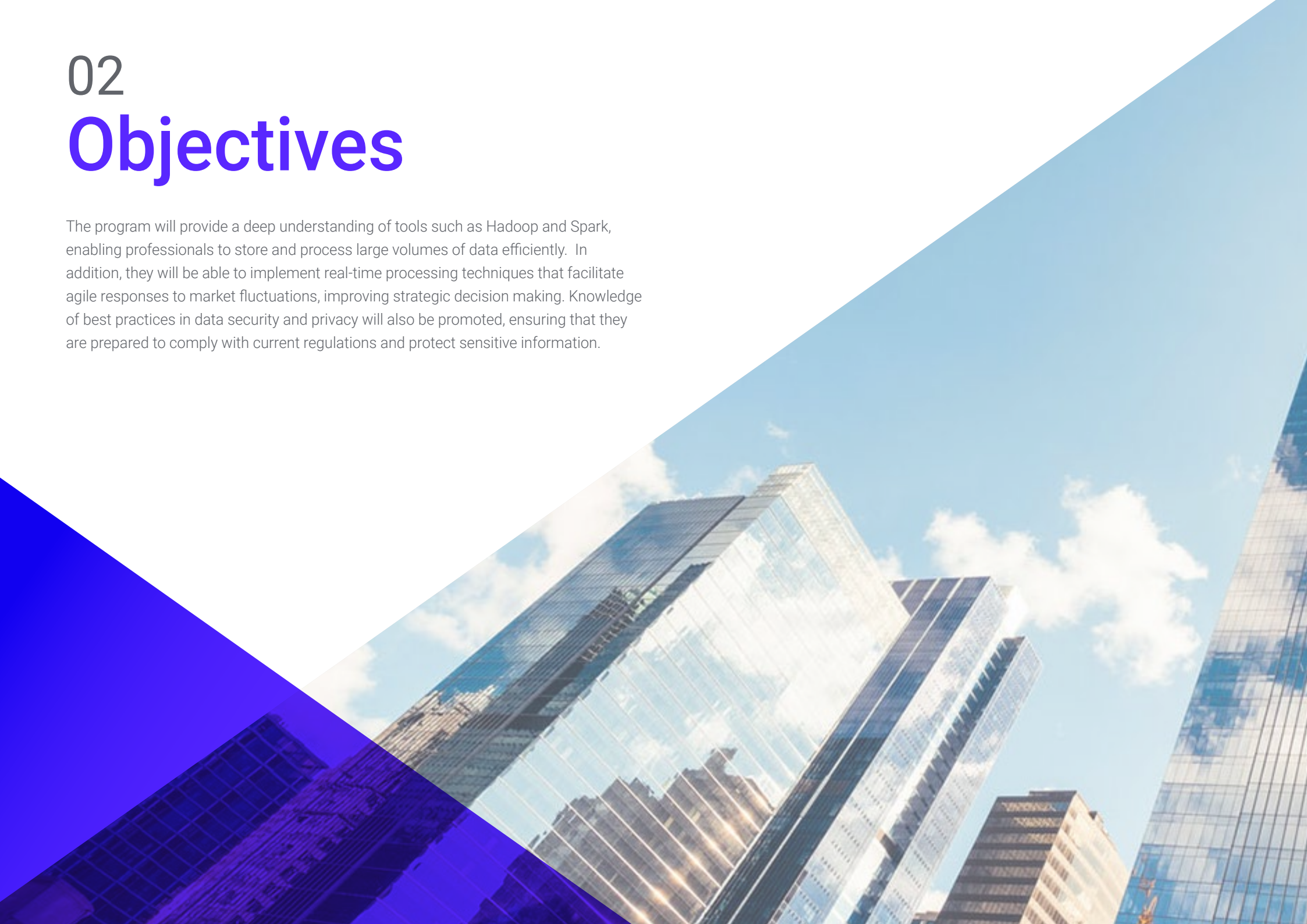
# Objectives

The program will provide a deep understanding of tools such as Hadoop and Spark, enabling professionals to store and process large volumes of data efficiently. In addition, they will be able to implement real-time processing techniques that facilitate agile responses to market fluctuations, improving strategic decision making. Knowledge of best practices in data security and privacy will also be promoted, ensuring that they are prepared to comply with current regulations and protect sensitive information.



*The objectives of the Postgraduate Certificate in Large Scale Financial Data Processing will focus on training graduates in the mastery of Big Data technologies and their application in the financial sector"*

## General Objectives

- Acquire skills in processing and analyzing large volumes of financial data using Big Data technologies, such as Hadoop and Spark
- Develop a thorough understanding of the ethical and regulatory challenges associated with the use of Artificial Intelligence in finance
- Equip students with the tools and knowledge necessary to develop innovative financial solutions that integrate Artificial Intelligence
- Apply AI technologies in finance in an ethical and responsible manner, incorporating fairness, transparency and privacy considerations into their solutions



## Specific Objectives

- Master the use of Big Data technologies, such as Hadoop and Spark, for the storage and processing of large volumes of financial data, optimizing the capacity for analysis and decision making
- Implement tools and techniques for real-time processing of financial data, enabling fast and effective responses to market fluctuations
- Apply best practices to ensure the security and privacy of financial data, ensuring compliance with industry regulations

*This Postgraduate Certificate will not only expand your career opportunities, but also prepare you to become an agent of change in a constantly evolving field"*

03

# Course Management

The faculty are highly qualified professionals, with experience in both academia and the financial industry. As such, they have training in fields such as data engineering and finance, offering a comprehensive and up-to-date perspective on Big Data technologies and their practical application. In addition, they are involved in advanced research and innovation projects, which will enrich the course content with real case studies and cutting-edge examples. In fact, their pedagogical approach will combine theory with practice, facilitating active and dynamic learning.

*Teachers will not only impart knowledge, but will also act as mentors, guiding graduates in the development of critical skills for their future professional career"*

## Management

### Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus 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



## Professors

### Mr. Sánchez Mansilla, Rodrigo

- Digital Advisor at AI Shepherds GmbH
- Digital Account Manager at Kill Draper
- Head of Digital at Kuarere
- Digital Marketing Manager at Arconi Solutions, Deltoid Energy and Brinergy Tech
- *Founder and National Sales and Marketing Manager*
- Master's Degree in Digital Marketing (MDM) by The Power Business School
- Bachelor's Degree in Business Administration (BBA) from the University of Buenos Aires

*A unique, crucial and decisive learning experience to boost your professional development"*

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# Structure and Content

The contents will include an introduction to Big Data technologies, with a focus on tools such as Hadoop and Spark, which enable the efficient storage and processing of large volumes of financial data. In addition, advanced data analysis techniques, including data mining and machine learning, will be covered to identify meaningful patterns and trends. Real-time processing will also be addressed, handling data flows to respond agilely to market dynamics.

*This Postgraduate Certificate in Large Scale Financial Data Processing will cover a wide range of essential content to specialize you in this emerging field"*

## **Module 1.** Large Scale Financial Data Processing

1.1. Big Data in the Financial Context
- 1.1.1. Key Characteristics of Big Data in Finance
- 1.1.2. Importance of the 5 Vs (Volume, Velocity, Variety, Veracity, Value) in Financial Data
- 1.1.3. Use Cases of Big Data in Risk Analysis and Compliance

1.2. Technologies for Storage and Management of Financial Big Data
- 1.2.1. NoSQL Database Systems for Financial Warehousing
- 1.2.2. Using Data Warehouses and Data Lakes in the Financial Sector
- 1.2.3. Comparison between On-Premises and Cloud-Based Solutions

1.3. Real-Time Processing Tools for Financial Data
- 1.3.1. Introduction to Tools such as Apache Kafka and Apache Storm
- 1.3.2. Real-Time Processing Applications for Fraud Detection
- 1.3.3. Benefits of Real-Time Processing in Algorithmic Trading

1.4. Integration and Data Cleaning in Finance
- 1.4.1. Methods and Tools for Integrating Data from Multiple Sources
- 1.4.2. Data Cleaning Techniques to Ensure Data Quality and Accuracy
- 1.4.3. Challenges in the Standardization of Financial Data

1.5. Data Mining Techniques Applied to The Financial Markets
- 1.5.1. Classification and Prediction Algorithms in Market Data
- 1.5.2. Sentiment Analysis in Social Networks for Predicting Market Movements
- 1.5.3. Data Mining to Identify Trading Patterns and Investor Behavior

1.6. Advanced Data Visualization for Financial Analysis
- 1.6.1. Visualization Tools and Software for Financial Data
- 1.6.2. Design of Interactive Dashboards for Market Monitoring
- 1.6.3. The Role of Visualization in Risk Analysis Communication

1.7. Use of Hadoop and Related Ecosystems in Finance
- 1.7.1. Key Components of the Hadoop Ecosystem and Their Application in Finance
- 1.7.2. Hadoop Use Cases for Large Transaction Volume Analysis
- 1.7.3. Advantages and Challenges of Integrating Hadoop into Existing Financial Infrastructures



1.8. Spark Applications in Financial Analytics
- 1.8.1. Spark for Real-Time and Batch Data Analytics
- 1.8.2. Predictive Model Building Using Spark MLlib
- 1.8.3. Integration of Spark with Other Big Data Tools in Finance

1.9. Data Security and Privacy in the Financial Sector
- 1.9.1. Data Protection Rules and Regulations (GDPR, CCPA)
- 1.9.2. Encryption and Access Management Strategies for Sensitive Data
- 1.9.3. Impact of Data Breaches on Financial Institutions

1.10. Impact of Cloud Computing on Large-Scale Financial Analysis
- 1.10.1. Advantages of the Cloud for Scalability and Efficiency in Financial Analysis
- 1.10.2. Comparison of Cloud Providers and Their Specific Financial Services
- 1.10.3. Case Studies on Migration to the Cloud in Large Financial Institutions

*The contents of this Postgraduate Certificate will provide you with comprehensive training, preparing you to be a leader in data analysis and management in the financial sector"*

05

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: Relearning.
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the New England Journal of Medicine have considered it to be one of the most effective.

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

## 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"*


*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

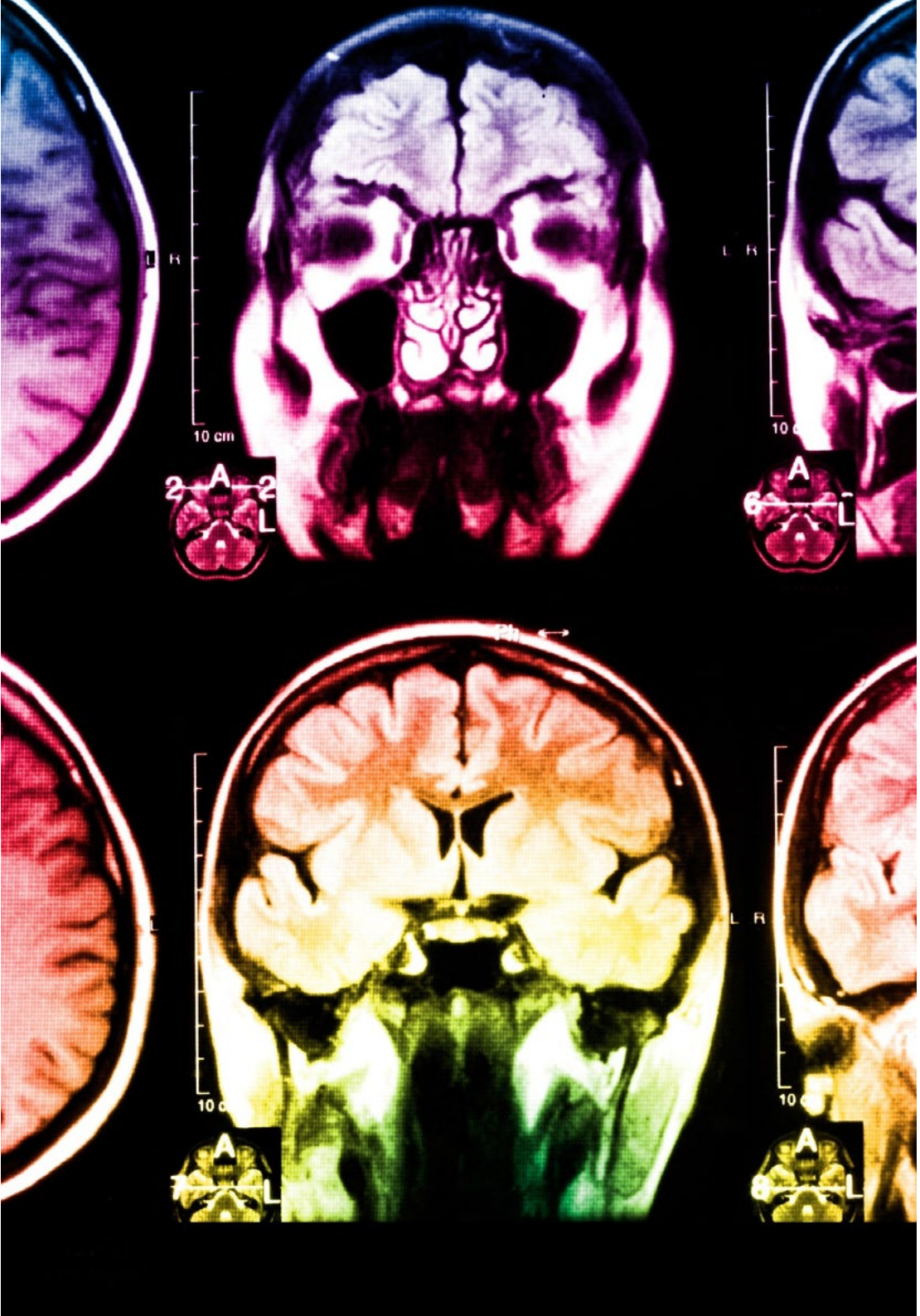
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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.

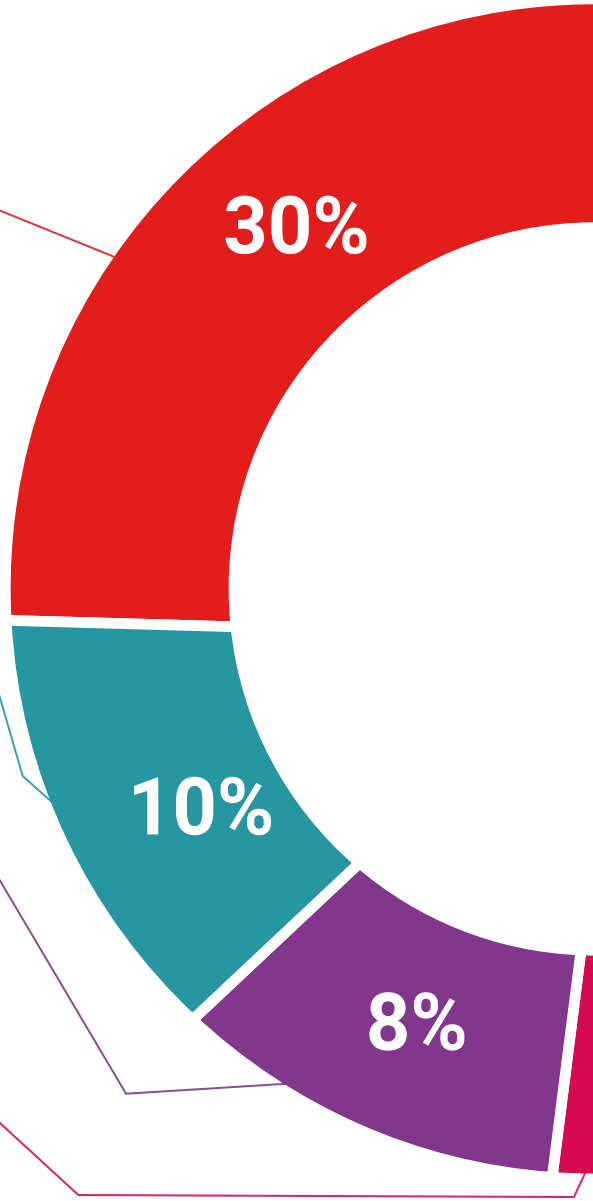
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

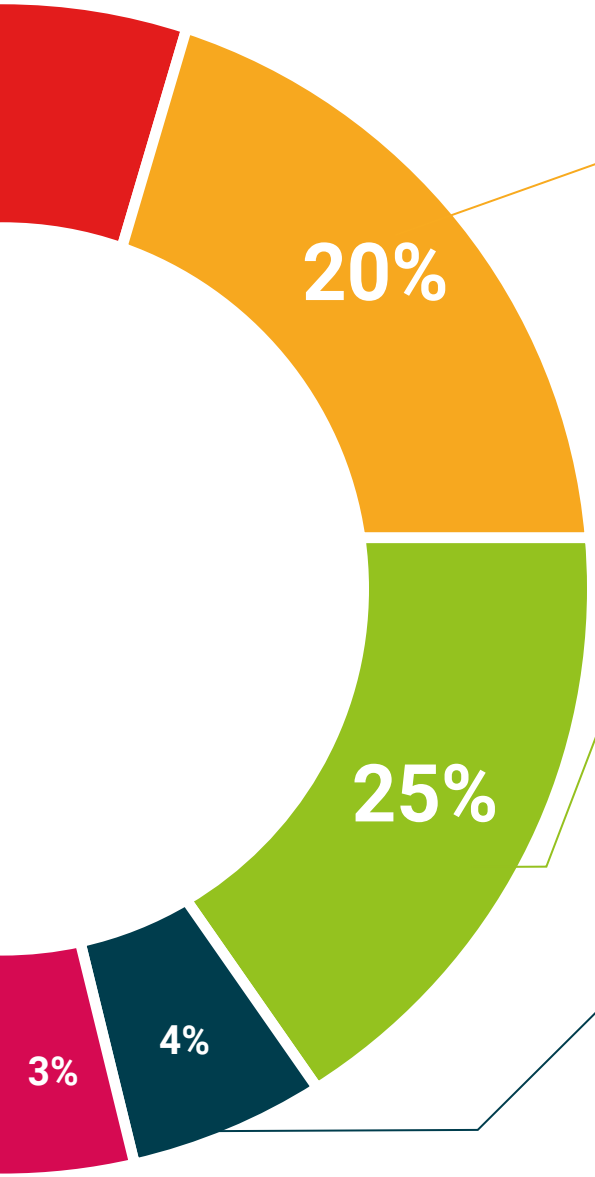
### Practising Skills and Abilities

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 Large Scale Financial Data Processing in 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 Large Scale Financial Data Processing** contains the most complete and up-to-date scientific program on the market.

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

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

Title: **Postgraduate Certificate in Large Scale Financial Data Processing**

Modality: **online**

Duration: **6 weeks**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Awards the following

DIPLOMA

to

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

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Large Scale Financial Data Processing

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

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

June 17, 2020

Tere Guevara Navarro

Dean

Unique TECH Code: AFWORD23S techtitute.com/certificates

*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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