



# Postgraduate Diploma Data Storage, Recovery and Processing

» Modality: online

» Duration: 6 months

» Certificate: TECH Global University

» Credits: 18 ECTS

» Schedule: at your own pace

» Exams: online

» Target Group: Computer engineers who wish to reorient their work towards the world of business intelligence, or established professionals in the field of BI who need to update, deepen and improve their skills and knowledge

 $We bsite: {\color{blue}www.techtitute.com/us/school-of-business/postgraduate-diploma/postgraduate-diploma-data-storage-recovery-processing}$ 

# Index

02 Welcome p. 4 05 Structure and Content

Why Study at TECH?

Course Management

80

p. 6

p. 20

p. 38

03 Why Our Program?

06

Methodology

Impact on Your Career

p. 42

Objectives

p. 14

p. 10

p. 26

Our Students' Profiles

p. 34

Benefits for Your Company

p. 46

Certificate

# 01 **Welcome**

New technologies allow the management of large amounts of data that are essential for the good performance of businesses, but to ensure that they are stored and processed efficiently, it is necessary to use the right tools. Applying the most appropriate tools for the needs of each company is not an easy task, so programs like this one train students to be able to perform the tasks of exploration, visualization, transformation and data analysis using Python and R programming languages, focusing on the libraries available to carry out each of them. In addition, it will help them to elaborate data synthesis using the most up-to-date systems on the market. Without a doubt, this is an indispensable program for business professionals, and it has been designed thanks to the support of a group of experts trained in the area, who offer students their many years of experience.









# tech 08 | Why Study at TECH?

#### At TECH Global University



#### **Innovation**

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

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



#### The Highest Standards

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

95%

of TECH students successfully complete their studies



#### **Networking**

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

+100000

+200

executives prepared each year

different nationalities



#### **Empowerment**

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

+500

collaborative agreements with leading companies



#### **Talent**

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

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



#### **Multicultural Context**

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

TECH students represent more than 200 different nationalities.



# A

#### Learn with the best

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

Teachers representing 20 different nationalities.



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

### Why Study at TECH? | 09 tech

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



#### **Analysis**

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



#### **Academic Excellence**

TECH offers students the best online learning methodology. The university combines the Relearning method (postgraduate learning methodology with the best international valuation) with the Case Study. Tradition and vanguard in a difficult balance, and in the context of the most demanding educational itinerary.



#### **Economy of Scale**

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





# tech 12 | Why Our Program?

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



#### A Strong Boost to Your Career

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

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



# Develop a strategic and global vision of the company

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

Our global vision of companies will improve your strategic vision.



#### Consolidate the student's senior management skills

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

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



#### You will take on new responsibilities

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

45% of graduates are promoted internally.



#### Access to a powerful network of contacts

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

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



#### Thoroughly develop business projects.

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

20% of our students develop their own business idea.



#### Improve soft skills and management skills

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

Improve your communication and leadership skills and enhance your career.



#### You will be part of an exclusive community

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

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





# tech 16 | Objectives

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

The Postgraduate Diploma in Data Storage, Recovery and Processing enables the student to:



Demonstrate basic skills in using Python and R as tools for data analysis



Define the strategy to address a problem by adding value to data



Identify the strengths and weaknesses of the languages in order to adapt their use accordingly



03

Evaluate the necessary libraries and identify existing modules maximizing the reuse of available resources



Justify the use of techniques and methods using qualitative and quantitative analysis



Develop the ability to establish and propose combinations of preprocessing methods that improve data quality



Generate specialized knowledge to obtain relevant information for decision making



09

Address direct communication between company departments and customers for a stable relationship



Adequately present the information, using the power of languages to synthesize the conclusions of the analysis in an explanatory way



Develop the commercial strategy



Justify the importance of customer retention and customer loyalty



Establish the essential qualities of distributed systems



Develop a unified reporting system for each process of the company



13

Develop company-wide integration skills in systems that are easy to control and manage and accessible in real time



Evaluating the relational model and NoSQL models







## tech 22 | Structure and Content

#### **Syllabus**

For any company it is important to have professionals who are able to carry out tasks of data storage, retrieval and processing. This specialization can only be achieved with high quality higher education. For this reason, TECH offers its students this program, thanks to which they will be able to perform various essential tasks in data analysis and summarize the information by presenting statistics and graphs that summarize the information in an appropriate manner.

On the other hand, finding the right tools, according to the needs of each company, is not an easy task. For this reason, this program will teach students to analyze two systems that, both together and separately, can help improve the company's productivity. ERP manages the business processes of the entire company, while CRM helps manage customer relationships. Both systems are implemented to increase profitability, but it is key to organize all relevant information from all departments and use it correctly to facilitate communication between areas and teams to improve decision making.

By the end of the program, the student will understand the term "big data" by analyzing the distribution systems of massive data use, detailing its characteristics and getting into the foundations. In such a way that, knowing the different options, as well as the advantages and disadvantages of the fundamental pieces of Big Data systems, they will be able to choose the best options in future designs.

In conclusion, the syllabus is designed for Students, focusing on the future graduate and preparing them to achieve excellence within a business team. By understanding the needs of the student and the companies, it is possible to present valuable content, based on the latest technological trends and supported by an excellent teaching staff. In this way, it provides the necessary competencies to solve critical situations in a creative and efficient way.

This Postgraduate Diploma takes place over 6 months and is divided into 3 modules:

Module 1 Data manipulation and analytics using Python and R

Module 2 Business Information Systems - ERP & CRM

Module 3 Big Data systems and Hadoop ecosystem for its exploitation



#### Where, When and How is it Taught?

TECH offers the possibility of developing this Postgraduate Diploma in Data Storage, Recovery and Processing completely online. Throughout the 6 months of the educational program, you will be able to access all the contents of this program at any time, allowing you to self-manage your study time.

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

Mod	ule 1. Data manipulation and analytics	using	Python and R				
1.1.1. 1.1.2. 1.1.3.	Python y R History and characteristics of languages Python Setup Installation of R Other Tools	1.2.1. 1.2.2. 1.2.3. 1.2.4.	Types of Data in Python Basic Types Complex Types Data Operations Control Structures File Operations	1.3.1. 1.3.2. 1.3.3. 1.3.4.	Types of Data in R  Basic Types Complex Types Data Operations Control Structures File Operations	1.4.1. 1.4.2.	Information extraction and visualization with Python Main statistical summaries Univariate Analysis Multivariate Analysis
1.5.2.	Information extraction and visualization with R Main statistical summaries Univariate Analysis Multivariate Analysis	1.6.2.	Corporate Social Responsibility in IT Projects Outlier detection and analysis Subsampling and resampling Dimensionality Reduction	<b>1.7.</b> 1.7.1. 1.7.2. 1.7.3.	Preprocessing in R Outlier detection and analysis Subsampling and resampling Dimensionality Reduction	1.8.1. 1.8.2.	Modeling in Python Division of the Data Set Basic modeling and main libraries Prediction and evaluation of metrics
1.9.1. 1.9.2.		1.10.1 1.10.2	Language comparison Strengths and weaknesses Good Practices Conclusion and Bookstores of Interest				
Mod	ule 2. Business Information Systems -	ERP &	CRM				
2.1.1. 2.1.2. 2.1.3.	ERP and CRM ERP and CRM CRM Differences between ERP, CRM and point of sale ERP and CRM as drivers of business success	2.2.1. 2.2.2.	ERP Benefits for our company ERP Implementation Latest ERP developments	2.3.1. 2.3.2. 2.3.3. 2.3.4.	ERP as a resource optimizer  Modules in an ERP system Information extracted from ERP Architecture Advantages and Disadvantages Types of ERP systems	2.4.1. 2.4.2.	ERP Systems Current tools on the market The perfect ERP for our company Implementation and stages
2.5.4. 2.5.5. 2.5.6.	Current Situation Sales or Loyalty Customer Loyalty Profitability Customer marketing Program Types	2.6.1. 2.6.2.	CRM:Creation and management of an information system Benefits of investing in an information system Design of the commercial information system Investment Strategies in Information Systems	2.7.1.	CRM: Communication actions with customers Communication. Hearing	2.8.1. 2.8.2. 2.8.3.	CRM: Detecting and recovering dissatisfied customers The danger of not asking Benefits of detecting errors How to correct and rectify errors How to win back the customer and desig processes of continuous improvement
2.9.1. 2.9.2. 2.9.3.		2.10.1 2.10.2 2.10.3	Implementation of a relationship marketing program     Most frequent implementation errors     Implementation proposal methodology     Segmentation.     Benchmarking	2.10.6 2.10.7 2.10.8	. Processes . Training . Systems . Design of Loyalty Actions . CRM Tools		

3.1.2.	Massive data systems Scales Reliability Maintainability	3.2. 3.2.1. 3.2.2. 3.2.3.	Data Representation  Evolution of Data Models  Comparison of the relational model with the document model  Network Model	3.3. 3.3.1. 3.3.2. 3.3.3.	Data Storage and Retrieval Engines Storage in file with log structure Storage in tables of sorted strings Trees B		formats	
3.5.	Replication	3.6.	Distributed Transactions	3.7.	Partitions	3.8.	Big-Data Analysis: Hadoop	
3.5.2.	CAP Theorem Consistency Models	3.6.1. 3.6.2.	Atomic Operations Distributed transactions	3.7.2.		3.8.2.	Types of Partitions Indexes in Partitions	
3.5.3.	Different models of leaders and followers	3.6.3.	for partitioned databases Serialisability	3.7.3.	Partition Rebalancing	3.8.3.	Partition Rebalancing	
3.9.1. 3.9.2.	Big-Data analysis tools on Hadoop Types of Partitions Indexes in Partitions Partition Rebalancing	3.10. Big Data and Machine						
			Learning: Spark Limitations to the Hadoop model					
			Architecture and data flow Data processing in Spark: operations with RDD					
		3.10.4	Machine learning with Spark and Mahouts					



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.



# tech 28 | Methodology

# TECH Business School uses the Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.





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



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

#### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch to present executives with challenges and business decisions at the highest level, whether at the national or international level. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and business reality is taken into account.



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

The case method has been the most widely used learning system among the world's leading business schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question we face in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They must integrate all their knowledge, research, argue and defend their ideas and decisions.

# tech 30 | Methodology

#### Relearning Methodology

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

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

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

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

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



### Methodology | 31 tech

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically. With this methodology we have trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, markets, and financial instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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

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

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

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



#### **Study Material**

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

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



#### **Classes**

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

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



#### **Management Skills Exercises**

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



#### **Additional Reading**

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





Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best senior management specialists in the world.



#### **Interactive Summaries**

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



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

#### **Testing & Retesting**

 $\langle \rangle$ 

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.

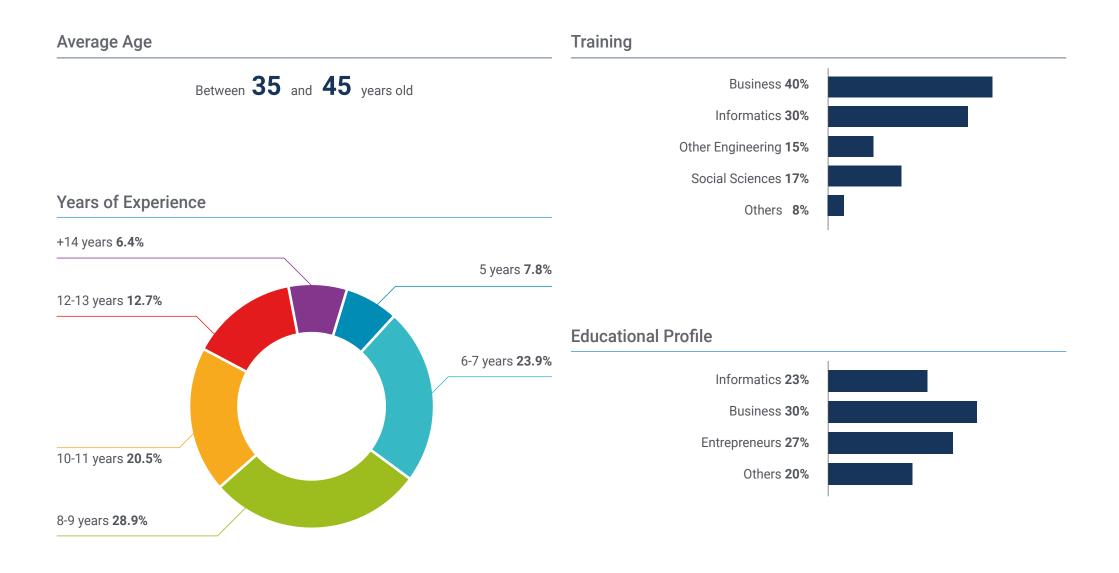


30%

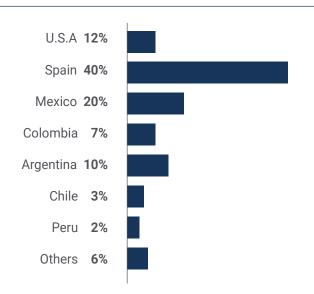




## tech 36 | Our Students' Profiles



# **Geographical Distribution**





# **Jorge Cabello**

#### **Consultant Business Intelligence**

"Having a university that gives you the facility to continue my studies without leaving my responsibilities has helped me to grow professionally. Since then I have been able to increase by 10% the management of my department, proposing successful solutions to commercial problems."





### Management



## Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO en Corporate Technologies in Corporate Technologies
- CTO in Al Shephers GmbH
- Doctorate in Psychology from the University of CastillaLa
- PhD in Economics, Business and Finance from the Camilo José Cela University. Outstanding Award in her PhD
- Master's Degree in Advanced Information Technologies from the University of Castilla la Mancha
- Master MBA+E (Master's Degree in Business Administration and Organisational Engineering) from the University of Castilla la Mancha
- Associate lecturer, teaching undergraduate and master's degrees in Computer Engineering at the University of Castilla la Mancha
- Professor of the Master in Big Data and Data Science at the International University of Valencia
- Lecturer of the Master's Degree in Industry 4.0 and the Master's Degree in Industrial Design and Product Development
- Member of the SMILe Research Group of the University of Castilla la Mancha

#### **Professors**

#### Mr. Díaz Díaz-Chirón, Tobías

- » Researcher at the ArCO laboratory of the University of Castilla-La Mancha, a group dedicated to projects related to computer architectures and networks
- » Consultant at Blue Telecom, a company dedicated to the telecommunications sector
- » Computer Engineer from the University of Castilla la Mancha

#### Ms. Martínez Cerrato, Yésica

- » Electronic Security Product Technician at Securitas Security Spain
- » Business Intelligence Analyst at Ricopia Technologies (Alcalá de Henares) Degree in Electronic Communications Engineering at the Polytechnic School, University of Alcalá
- » Responsible for training new recruits on commercial management software (CRM, ERP, INTRANET), product and procedures in Ricopia Technologies (Alcalá de Henares)
- » Responsible for training new scholarship holders incorporated to the Computer Classrooms at the University of Alcalá
- » Project Manager in the area of Key Accounts Integration at Correos and Telégrafos (Madrid)
- » Computer Technician-Responsible for computer classrooms OTEC, University of Alcalá (Alcalá de Henares)
- » Computer classes teacher at ASALUMA Association (Alcalá de Henares)
- » Scholarship for training as a Computer Technician in OTEC, University of Alcala (Alcalá de Henares)

#### Ms. Pedrajas Parabá, Elena

- » Business Analyst in Management Solutions in Madrid
- » Collaborator with the Department of Numerical Analysis at the University of Cordoba Professional Experience
- » Researcher in the Department of Computer Science and Numerical Analysis at the University of Córdoba
- » Researcher at the Singular Center for Research in Intelligent Technologies in Santiago de Compostela
- » Degree in Computer Engineering Master's Degree in Data Science and Computer Engineering Teaching Experience

#### Mr. Peris Morillo, Luis Javier

- » Technical Lead in Capitole Consulting
- » Senior Technical Lead y Delivery Lead Support en HCL
- » Agile Coach and Director of Operations at Mirai Advisory
- » Higher Engineering in Computer Science by the ESI of Ciudad Real (UCLM)
- Postgraduate in Project Management by CEOE Confederación Española de
   Organizaciones Empresariales (Spanish Confederation of Business Organisations)





If you want to make a positive change in your profession, the Postgraduate Diploma in Processing and Extracting Knowledge from Data will help you achieve it.

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

The Postgraduate Diploma in Processing and Extraction of Knowledge from TECH Data prepares students for the main business and personal challenges that the graduate will face after completing the program. This requires an exceptional effort from everyone, including the student himself, who must give his best to reach the top of the business world.

Do not miss the opportunity to train with us and you will find the improvement you were looking for.

## Time of Change



# Type of change



# Salary increase

This program represents a salary increase of more than **25%** for our students.

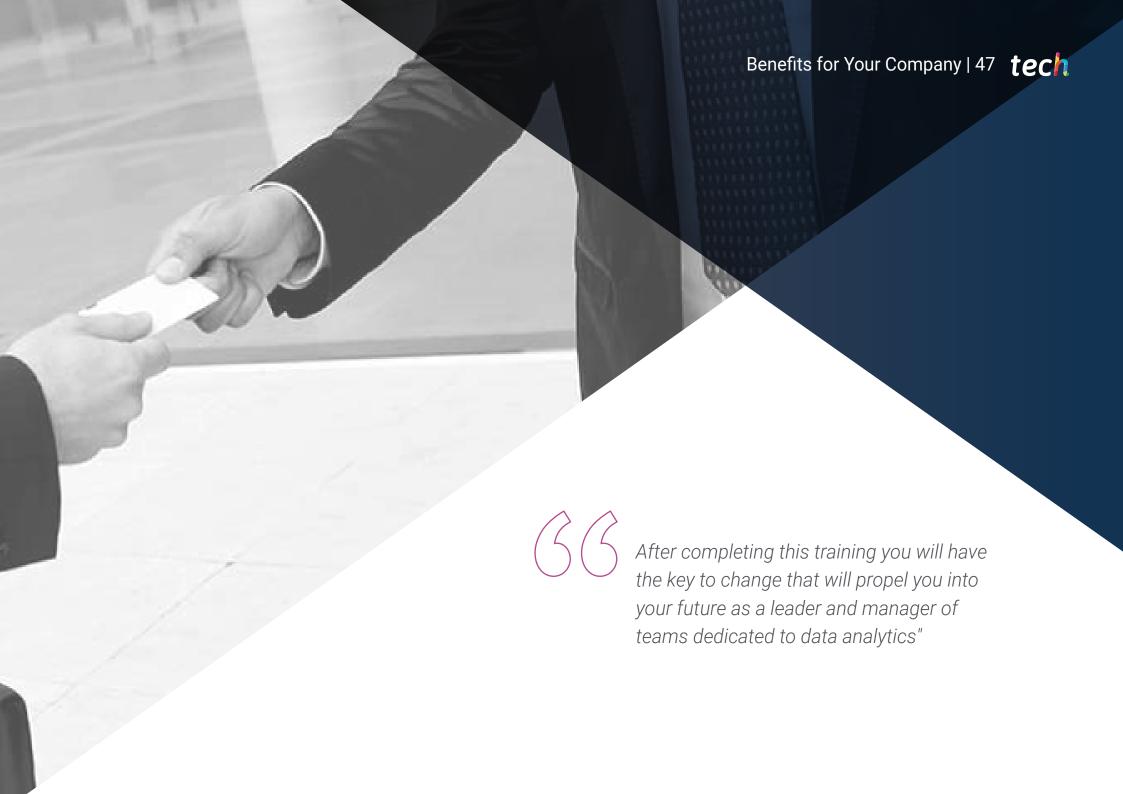
\$32,900

A salary increase of

25.22%

\$41,200





# tech 48 | Benefits for Your Company

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



## Growth of talent and intellectual capital

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



# Retaining high-potential executives to avoid talent drain

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



# **Building agents of change**

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



# Increased international expansion possibilities

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





# **Project Development**

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



# Increased competitiveness

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





# tech 52 | Certificate

This program will allow you to obtain your **Postgraduate Diploma in Data Storage, Retrieval and Processing** 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** title 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 Diploma in Data Storage, Retrieval and Processing

Modality: online

Duration: 6 months

Accreditation: 18 ECTS



Mr./Ms. \_\_\_\_\_\_, with identification document \_\_\_\_\_ has successfully passed and obtained the title of:

# Postgraduate Diploma in Data Storage, Retrieval and Processing

This is a program of 450 hours of duration equivalent to 18 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024



<sup>\*</sup>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.



# Postgraduate Diploma Data Storage, Recovery and Processing

» Modality: online

» Duration: 6 months

» Certificate: TECH Global University

» Credits: 18 ECTS

» Schedule: at your own pace

» Exams: online

