



# Postgraduate Diploma Exploratory Data Analysis

» Modality: online

» Duration: 6 months

» Certificate: TECH Technological University

» Dedication: 16h/week

» Schedule: at your own pace

» Exams: online

» Target Group: university graduates and postgraduates who have completed a degree in computer engineering

Website: www.techtitute.com/pk/school-of-business/postgraduate-diploma/postgraduate-diploma-exploratory-data-analysis

# Index

01

Welcome

02

Why Study at TECH?

p. 4

03

Why Our Program?

p. 6

04

**Objectives** 

p. 14

05

**Structure and Content** 

p. 20

06

Methodology

p. 28

p. 10

07

Our Students' Profiles

p. 36

80

Course Management

p. 40

09

Impact on Your Career

p. 44

10

**Benefits for Your Company** 

p. 48

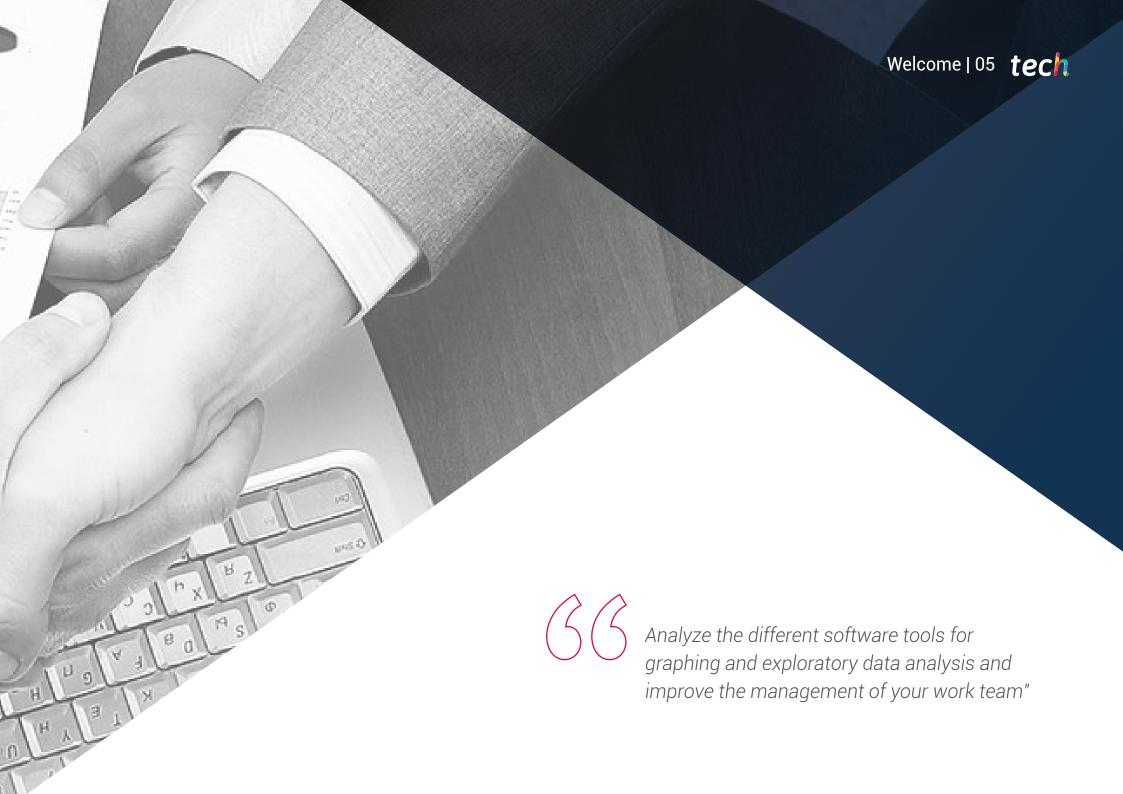
11

Certificate

# 01 **Welcome**

Nowadays, a large amount of data is generated and is increasing year after year. The managers of a technology department must have the right tools to synthesize and analyze them properly. Therefore, they must discriminate among a large number of softwares to choose the one that suits the needs of the company. This program will seek to develop the leadership skills of computer engineers and business professionals interested in a managerial position, identifying those programs that will help their work team perform adequately.









# tech 08 | Why Study at TECH?

#### At TECH Technological University



#### **Innovation**

The university offers an online learning model that combines 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.

100,000+

200+

executives trained 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.



#### 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 studies in the academic community"

## 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**

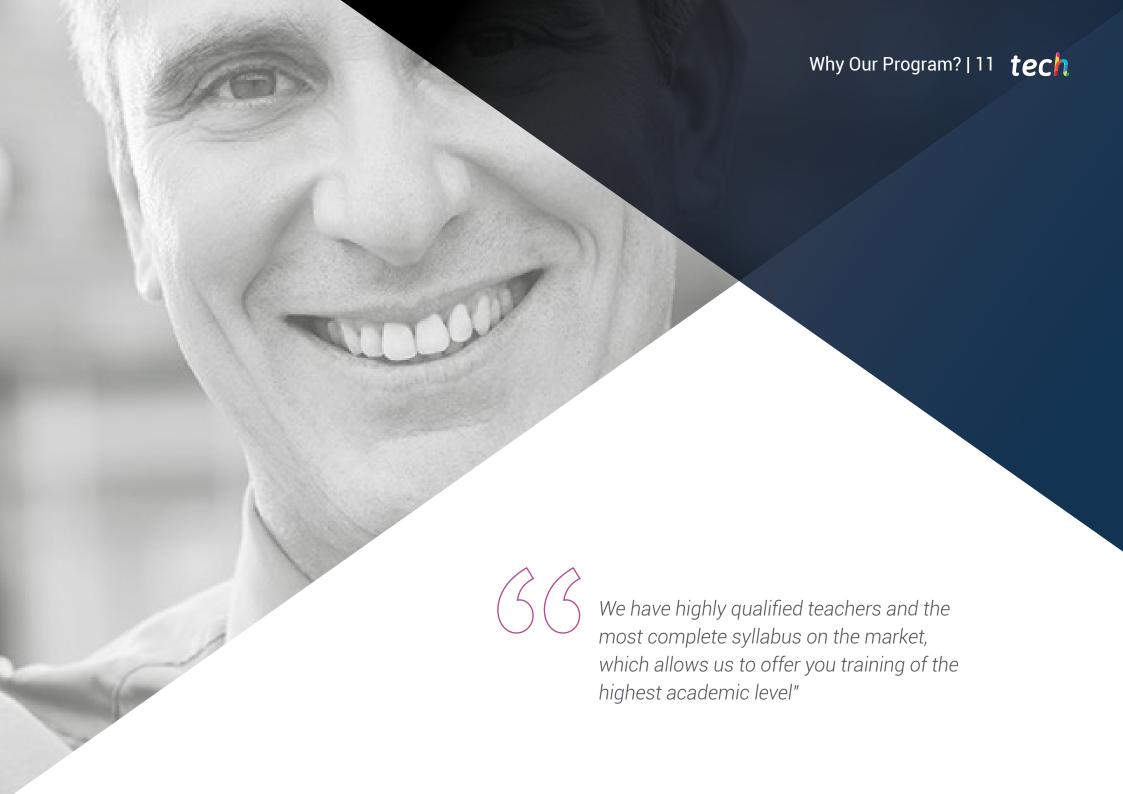
TECH offers students the best online learning methodology. The university combines the Relearning method (a postgraduate learning methodology with the highest international rating) with the Case Study. A complex balance between tradition and state-of-the-art, within the context of the most demanding academic 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 students with a multitude of professional and personal advantages, particularly the following:



#### A significant career boost

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 participants achieve positive career development in less than 2 years.



# Develop a strategic and global vision of companies

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

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.



#### 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 areas 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.



#### Be part of an exclusive community

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

We give you the opportunity to train 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 Exploratory Data Analysis** will enable the student to:



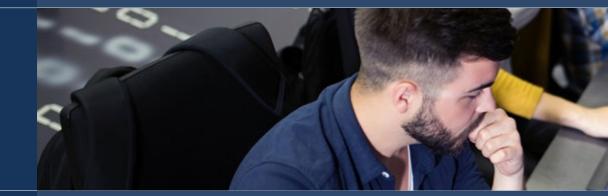
Perform data analyses



Determine the best practices for data management according to its typology and uses



Unify diverse data and achieve consistency of information

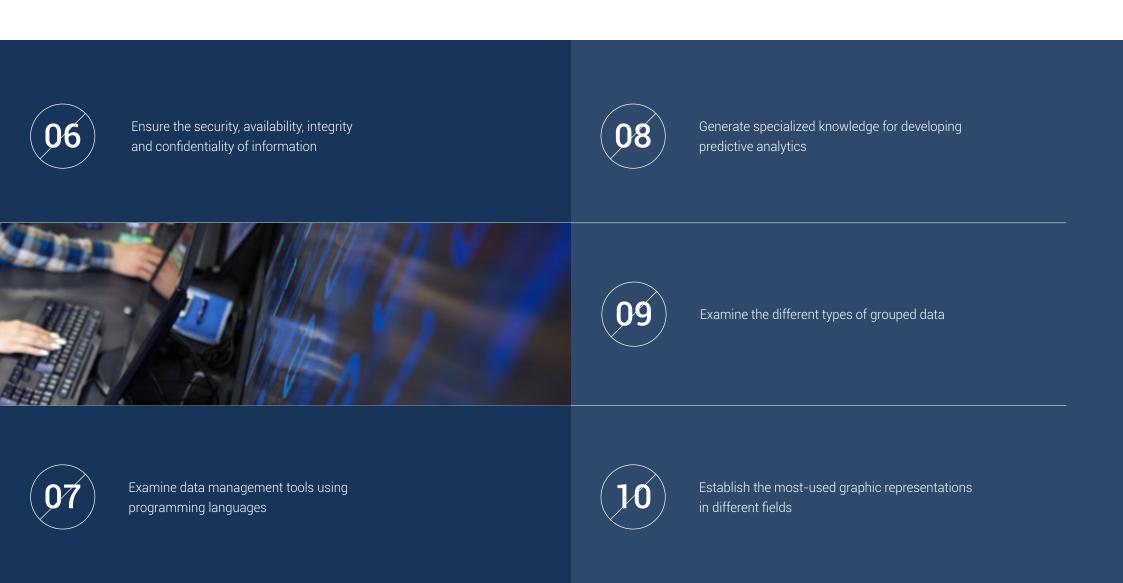




Produce relevant and effective information for decision making



Establish data access and reuse policies





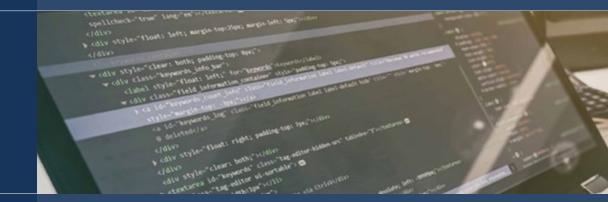
Determine the design principles in data visualization



Developing skills to convert data into information from which specialized knowledge can be extracted



Introduce graphic narrative as a tool



13

Analyze the different software tools for graphing and exploratory data analysis



Determine the main features of a Dataset, its structure, components and the implications of its distribution in modeling



Supporting decision-making by performing comprehensive data analysis in advance



Establish the most appropriate general tools and methods for modeling each Dataset based on the pre-processing performed





Evaluate the results in an analytical way, understanding the impact of the chosen strategy on the various metrics

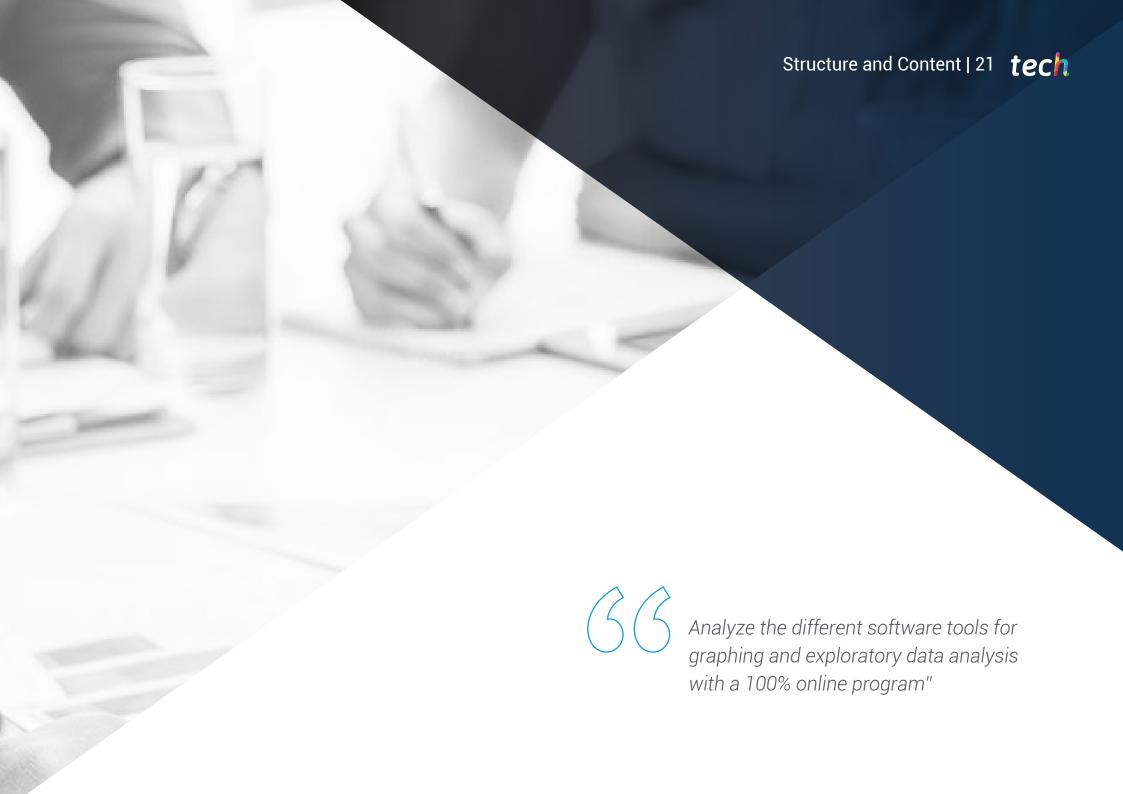


Develop skills to solve practical cases using data science techniques



Demonstrate a critical capacity for the results obtained after applying pre-processing or modeling methods





## tech 22 | Structure and Content

#### **Syllabus**

The Postgraduate Diploma in Exploratory Data Analysis at TECH Technological University will become an immersive experience in the management of a technology department focusing on improving the other structures of the organization.

To achieve the above, the program will enhance the theoretical and managerial skills of computer engineers interested in this field, helping them to understand data management, focusing at all times on its typology and life cycle and practical approach through the available resources.

Throughout the 450 hours of the educational program, the student will develop a critical attitude towards the strategies applied, being responsible for discerning in each case the most appropriate solution and explaining in a reasoned manner the results obtained in the different metrics. Therefore, it is an immersion of real business situations in the academic classroom

As the syllabus progresses, special emphasis will be placed on determining the main characteristics of a Dataset, its structure, components and the implications of its distribution in the modeling. To this end, the results will be assessed analytically, understanding the impact of the chosen strategy on the different metrics. In this way, it becomes a syllabus that meets the needs of students and prepares them to face any professional challenge at the IT and management level.

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

Module 1 Data and Information Management and Manipulation in Data Science

Module 2 Graphical Representation of Data Analysis

Module 3 Data Science Tools



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

TECH offers the possibility of developing this Postgraduate Diploma in Exploratory Data Analysis completely online. Over the course of 6 months, 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.

# tech 24 | Structure and Content

1.1.	Statistics. Variables, Indices and Ratios	<b>1.2.</b> 1.2.1.	Type of Data  Qualitative	1.3.	Data Knowledge from the Measurements	<b>1.4.</b> 1.4.1.	Data Knowledge from the Graphs Visualization According to Type of Data
1.1.1. 1.1.2. 1.1.3.		1.2.2. 1.2.3.			Centralization Measurements Measures of Dispersion Correlation	1.4.2.	
1.5.	Probability	1.6.	Data Collection	1.7.	Data Cleaning	1.8.	Data Analysis, Interpretation and
	Probability	1.6.1.	3,		Phases of Data Cleansing		Evaluation of Results
	Function of Probability Distributions	1.6.2. 1.6.3.	Data Collection Tools Data Collection Channels		Data Quality Data Manipulation (with R)	1.8.1.	Statistical Measures
1.0.5.	. Distributions	1.0.5.	Data Collection Challies	1.1.3.	Data Manipulation (With N)		Relationship Indices Data Mining
1.9.	Data Warehouse	1.10	. Data Availability				
	Components		. Access				
1.9.2.	Design		2. Uses 3. Security/safety				

Module 2. Graphical Representation of Data Analysis							
<b>2.1.</b> 2.1.1. 2.1.2. 2.1.3.	· ·	<b>2.2.</b> 2.2.1. 2.2.2. 2.2.3.	Optimization for Data Science Color Range and Design Gestalt in Graphic Representation Errors to Avoid and Advice	2.3. 2.3.1. 2.3.2. 2.3.3.	Basic Data Sources For Quality Representation For Quantity Representation For Time Representation		Files, Lists and Databases Open Data
2.5. 2.5.1. 2.5.2. 2.5.3. 2.5.4. 2.5.5. 2.5.6.	Representation for Dispersion Analysis Circular Representations Bubble Representations		Types of Visualization Comparative and Relational Distribution Hierarchical	2.7.1. 2.7.2. 2.7.3. 2.7.4.	Representation Application of Graphs in Marketing Reports Application of Graphs in Scorecards and KPIs	2.8.2.	Graphic Narration Graphic Narration Evolution Uses
	Tools Oriented Towards Visualization Advanced Tools Online Software Open Source	2.10.1 2.10.2	New Technologies in Data Visualization Systems for Virtualization of Reality Reality Enhancement and Improvement Systems Intelligent Systems				

# tech 26 | Structure and Content

Mod	ule 3. Data Science Tools				
<b>3.1.</b> 3.1.1. 3.1.2.	Data Science Data Science Advanced Tools for Data Scientists	<ul><li>3.2. Data, Information and Knowledge</li><li>3.2.1. Data, Information and Knowledge</li><li>3.2.2. Types of Data</li><li>3.2.3. Data Sources</li></ul>	<ul> <li>3.3. From Data to Information</li> <li>3.3.1. Data Analysis</li> <li>3.3.2. Types of Analysis</li> <li>3.3.3. Extraction of Information from a Dataset</li> </ul>	3.4.1. 3.4.2.	Extraction of Information Through Visualization Visualization as an Analysis Tool Visualization Methods Visualization of a Data Set
<b>3.5.</b> 3.5.1. 3.5.2. 3.5.3.	9	<ul> <li>3.6. Dataset</li> <li>3.6.1. Dataset Enrichment</li> <li>3.6.2. The Curse of Dimensionality</li> <li>3.6.3. Modification of Our Data Set</li> </ul>	<ul><li>3.7. Unbalance</li><li>3.7.1. Classes of Unbalance</li><li>3.7.2. Unbalance Mitigation Techniques</li><li>3.7.3. Balancing a Dataset</li></ul>	3.8.2.	Unsupervised Models Unsupervised Model Methods Classification with Unsupervised Models
3.9.2.	Supervised Models Supervised Model Methods Classification with Supervised Models	3.10. Tools and Good Practices 3.10.1. Good Practices for Data Scientists 3.10.2. The Best Model 3.10.3. Useful Tools			



You will learn through case studies how the dynamics of a team leader work, turning this program into your opportunity for professional improvement"





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 30 | 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 32 | Methodology

#### **Relearning Methodology**

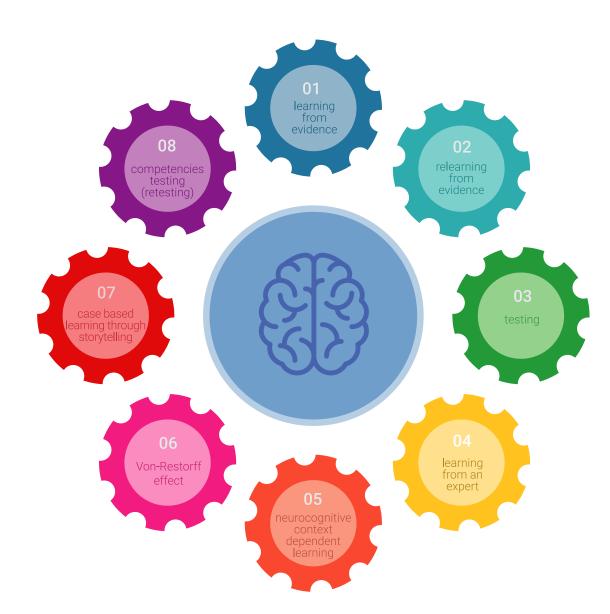
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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 | 33 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.

# tech 34 | Methodology

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.



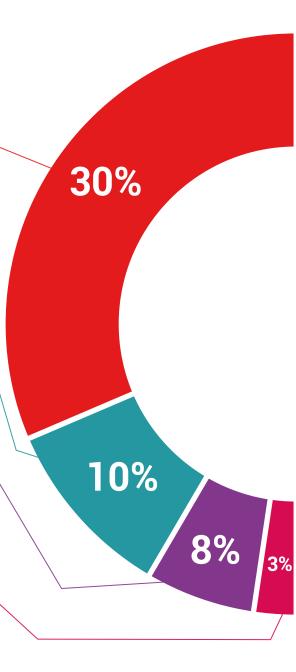
#### **Management Skills Exercises**

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.



#### **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 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.

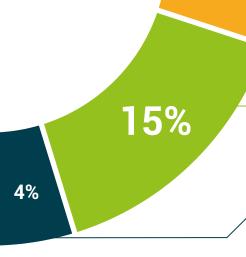


This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

#### **Testing & Retesting**

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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.

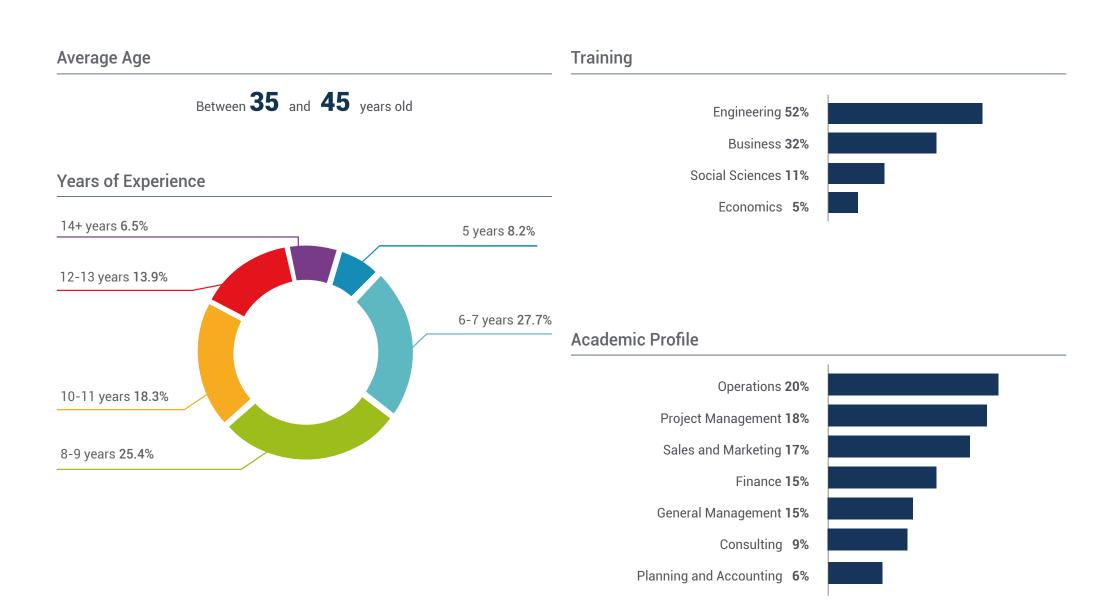


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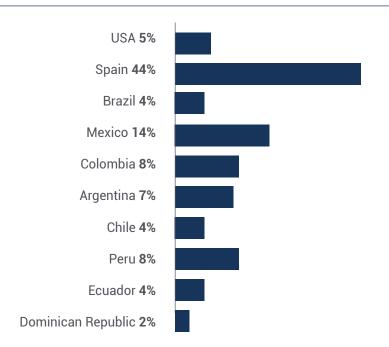




## tech 38 | Our Students' Profiles



### **Geographical Distribution**





# **Abel Ramón**

#### **Business IT Analyst**

"The striking thing about this program is the online modality and the opportunity to be able to do it at any time. With it, I have been able to continue working and learning at the same time. If you are looking for a unique program, this Postgraduate Diploma is the best option"





## tech 42 | Course Management

#### 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 Castilla La Mancha
- PhD in Economics, Business and Finance from the Camilo José Cela University. Outstanding Award in her PhD
- PhD in Psychology, University of Castilla La Mancha
- 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**

#### Ms. Fernández Meléndez. Galina

- Data Analyst in ADN Mobile Solution
- ETL processes, data mining, data analysis and visualisation, establishment of KPI's, Dashboard design and implementation, management control. ADN Mobile Solution-Gijón-Spain R development, SQL management, among others
- Pattern determination, predictive modelling, machine learning
- Bachelor's Degree in Business Administration. Bicentenaria de Aragua-Caracas University
- Diploma in Planning and Public Finance Venezuelan School of Planning, School of Finance
- Professional Master's Degree in Data Analysis and Business Intelligence. University of Oviedo
- MBA in Business Administration and Management (Escuela De Negocios Europea De Barcelona)
- Master in Big Data and Business Intelligence (Escuela de Negocios Europea de Barcelona)

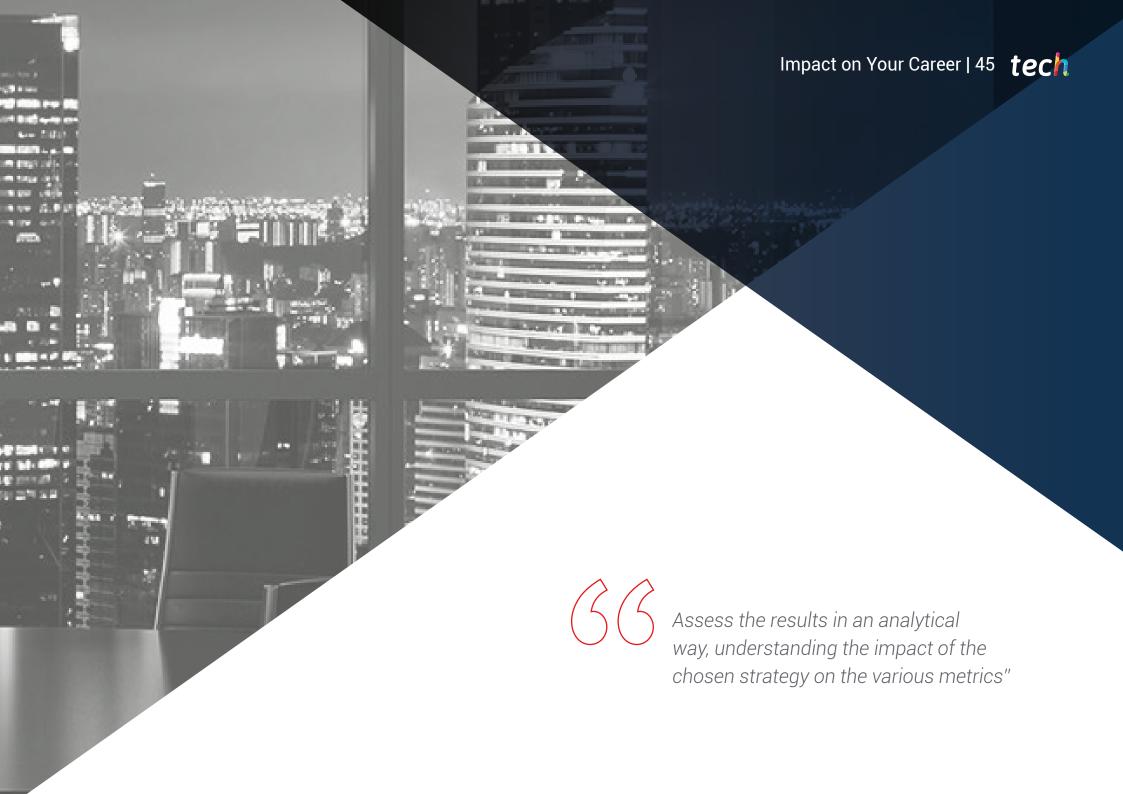
#### Ms. Pedrajas Parabá, Elena

- 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 Cordoba
- 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

#### 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)





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

TECH's Postgraduate Diploma in Exploratory Data Analysis is an intensive program that prepares you to face business challenges and decisions in the field of data analysis. The main objective is to promote personal and professional growth. Helping students achieve success.

If you want to improve yourself, make a positive change professionally and network with the best, this is the place for you.

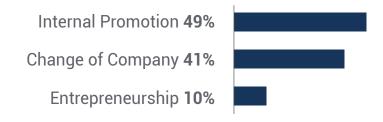
Invest in yourself and learn with us. You will see the improvement you are looking for on the first day of class.

If you want to make a positive change in your profession, the Postgraduate Diploma in Exploratory Data Analysis will help you achieve it.

#### When the change occurs



### Type of change



## Salary increase

This program represents a salary increase of more than 25.33% for our students.

\$22,900

A salary increase of

25.33%

\$28,700





# tech 50 | Benefits for Your Company

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



### **Intellectual Capital and Talent Growth**

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**

The student 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.



# Benefits for Your Company | 51 tech



## **Project Development**

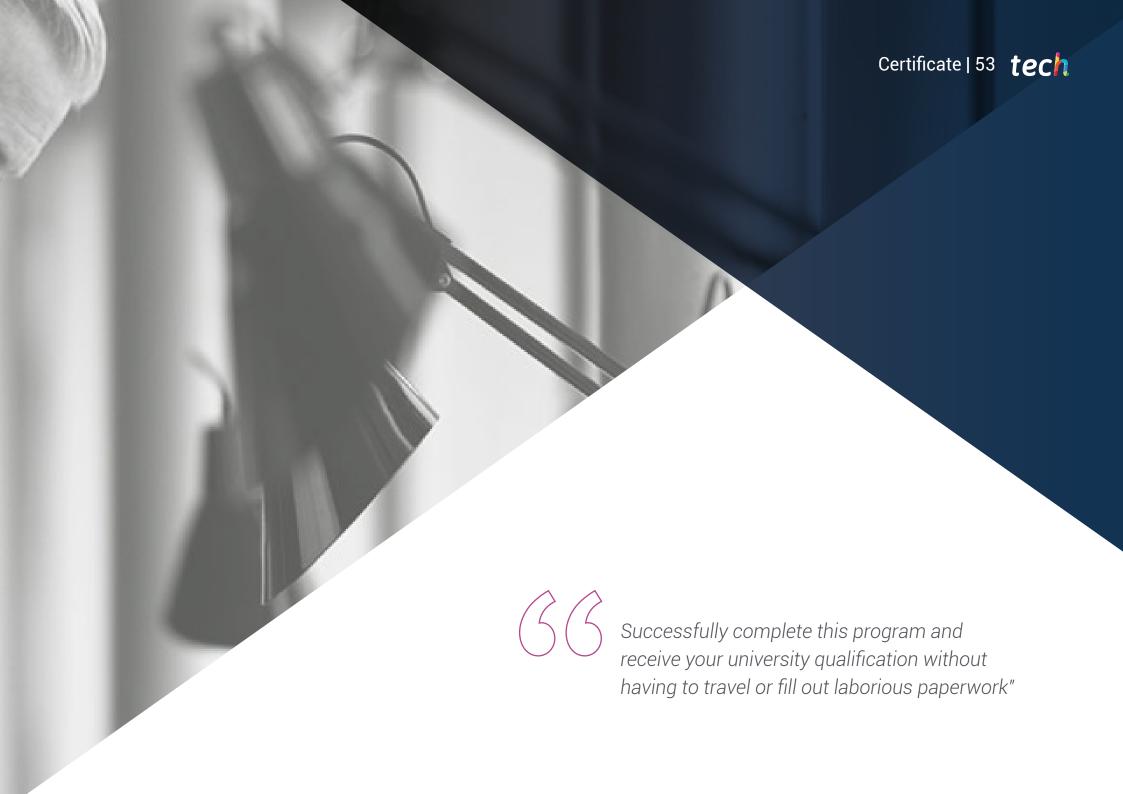
The manager can work on a current project or develop new projects in the field of R&D or Business Development within their company.



## Increased competitiveness

This Postgraduate Diploma will equip your professionals with the skills to take on new challenges and therefore drive the organization forward.





## tech 54 | Certificate

This **Postgraduate Diploma in Exploratory Data Analysis** contains the most complete and up to date educational program on the market.

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

The certificate 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 Diploma in Exploratory Data Analysis

Official No of hours: 450 h.





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