Postgraduate Certificate
Data Processing. Exploratory Analysis and Preprocessing

tech technological university

Postgraduate Certificate
Data Processing. Exploratory Analysis and Preprocessing

- » Modality: **online**
- » Duration: **6 weeks**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**
- » Target Group: **Computer engineers who wish to reorient their work towards the world of data analytics and business intelligence, or established professionals in this field who need to update, delve deeper and improve their skills and knowledge**

Website: **www.techtitute.com/in/school-of-business/postgraduate-certificate/data-processing-exploratory-analysis-preprocessing**

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01
Welcome

At present and with a view to a future where one of the most necessary raw materials for business development is a robust database, it is necessary to promote the study and obtaining the appropriate knowledge for its correct analysis, management and disposition. In this context, Business Intelligence systems are presented as key tools in business environments with the objective of favoring control and strategic decision making. In this way, this program expects to specifically and in detail address the tools that allow the analysis prior to the application of data mining techniques. With the objective of extracting the maximum value and knowledge, as well as their preparation so that they can serve as input to a certain algorithm. Providing the professional with a specialization that allows them to be more competitive in the labor market.

Postgraduate Certificate in Data Processing. Exploratory Analysis and Preprocessing.
TECH Technological University

tech

"Accurately manage a robust database to extract everything the company needs quickly and accurately. It is a skill you will develop in this Postgraduate Certificate"

Why Study at TECH?

TECH is the world's largest 100% online business school. It is an elite business school, with a model based on the highest academic standards. A world-class center for intensive managerial skills education.

TECH is a university at the forefront of technology, and puts all its resources at the student's disposal to help them achieve entrepreneurial success"

At TECH Technological 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 executives prepared each year

+200 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.

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

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"

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.

03
Why Our Program?

Studying this TECH program means increasing the chances of achieving professional success in senior business management.

It is a challenge that demands effort and dedication, but it opens the door to a promising future. Students will learn from the best teaching staff and with the most flexible and innovative educational methodology.

We have highly qualified teachers and the most complete syllabus on the market, which allows us to offer you education of the highest academic level"

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

01

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.

02

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.

03

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.

04

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.

05 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.

06 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.

07 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.

08 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 Technological University community.

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

04
Objectives

With the firm purpose of providing an education of excellence to its students and adjusted to the needs of today's world, TECH has created an entire program dedicated exclusively to the analysis prior to the application of data mining techniques in order to extract the maximum value and knowledge from them. With the Postgraduate Certificate in Data Processing, Exploratory Analysis and Preprocessing, TECH seeks to guarantee an effective professional and personal development within the labor field and Big Data environments.

Enhance your knowledge to be able to perform any type of data analysis and evaluation in business environments"

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

The **Postgraduate Certificate in Data Processing**. **Exploratory Analysis and Preprocessing** will enable the student to:

01 Develop high-level technical capabilities for exploratory data analysis

04 Learn how to extract the maximum value and knowledge from data, according to the objectives and business need

02 Understand how to apply BI to novel, known or recurring problems within the company

03 Evaluate the different types of algorithms and identify their advantages and disadvantages

05 Develop skills for data identification, preparation and transformation

06 Specify the appropriate method of data reduction for a given learning process

08 Compile the most advanced Bi-related techniques to stand out in the business

09 Determining the BI tool to be used in a company

07 Demonstrate the ability to interpret graphs for data description and knowledge of the different existing data preprocessing techniques for data cleaning, normalization and data transformation

10 Generate technical skills, statistical and quantitative knowledge

05
Structure and Content

The Postgraduate Certificate in Data Processing, Exploratory Analysis and Preprocessing, has been designed by TECH Technological University based on the need for specialized professionals in business intelligence that can contribute to strategic decision making and the advantages of its implementation. Qualifying the student in a totally online way, in the statistical analysis, its variables, its distribution, the study of missing values, among others, detailed in the agenda of this program. It provides everything that the professional needs in a Big Data environment.

In this Postgraduate Certificate you will examine with practical cases, the main techniques of analysis prior to a data mining process"

Syllabus

In the past, in the present and much more in the future with the incessant development of globalization, making the right decisions is one of the most important factors in any environment, especially in business. To do so, it is important to have as much data as possible, so that the decision to be taken is the closest to the interests that one has.

In view of this need, it is essential for any business to understand data processing, analysis and evaluation. For which it is necessary to have personnel trained and up-to-date in this subject. Statistical analysis and data preprocessing techniques offer a solid methodology for data refinement and preparation for further analysis.

In this sense, a Postgraduate Certificate has been created to qualify the professional in the analysis of a data set from the statistical point of view in order to summarize its main characteristics. Including the study of variables, their distribution, the study of missing values, among others, with the help of statistical and visual methods.

The next step is the preparation so that they can serve as input to a given data mining algorithm. Therefore, the techniques of data cleaning, transformation, imputation, noise reduction, balancing, feature selection, dimensionality reduction, among many others, will be studied.

A syllabus designed by an expert faculty, for a future graduate capable of facing major challenges within a business team. Understand the needs of today's market, so it adjusts its content to the most advanced techniques and processes. Supported by the best 100% online educational methodology developed in a secure and dynamic virtual campus, which will provide competencies to solve critical situations in a creative and efficient way.

This Postgraduate Certificate is developed over 6 week and is divided into 1 module:

| Module 1 | Data Processing. Exploratory Analysis and Preprocessing |

Where, When and How is it Taught?

TECH offers the possibility of developing this Executive Postgraduate Certificate in Data Processing. Exploratory Analysis and Preprocessing completely online. Over the course of 12 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.

Module 1. Data Processing. Exploratory Analysis and Preprocessing

1.1. Statistics
1.1.1. Descriptive Statistics
1.1.2. Statistical Inference
1.1.3. Parametric tests
1.1.4. Non-parametric tests

1.2. Exploratory Data Analysis
1.2.1. Exploratory Data Analysis. Descriptive Analysis
1.2.2. Data Visualization
1.2.3. Data Manipulation

1.3. Data Preparation
1.3.1. Data integration
1.3.2. Data Cleaning
1.3.3. Standardization
1.3.4. Transformation

1.4. Missing and empty values
1.4.1. Eliminating missing values
1.4.2. Maximum likelihood procedures
1.4.3. Imputation of Missing Values

1.5. Noise in the Data
1.5.1. Types of Noise
1.5.2. Noise detection and elimination
1.5.3. Learning with noise

1.6. The dimensionality problem
1.6.1. Oversampling
1.6.2. Subsampling
1.6.3. Principal Component Analysis (PCA)

1.7. Discretization
1.7.1. Discretization Process
1.7.2. Discretization methods
1.7.3. Characteristics and properties of discretization methods

1.8. Feature selection
1.8.1. Selection Criteria
1.8.2. Characteristics Selection Methods

1.9. Instance Selection
1.9.1. Classification of instance selection methods
1.9.2. Prototype Selection
1.9.3. Other methods for instance selection

1.10. Data Pre-processing in *Big Data* Environments
1.10.1. Big Data
1.10.2. Data Pre-processing in Big Data Environments
1.10.3. Smart Data

"Help your company find effective solutions in specific situations"

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"

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.

"

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

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

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.

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

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.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

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.

30%

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.

10%

8%

3%

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.

30%

15%

4%
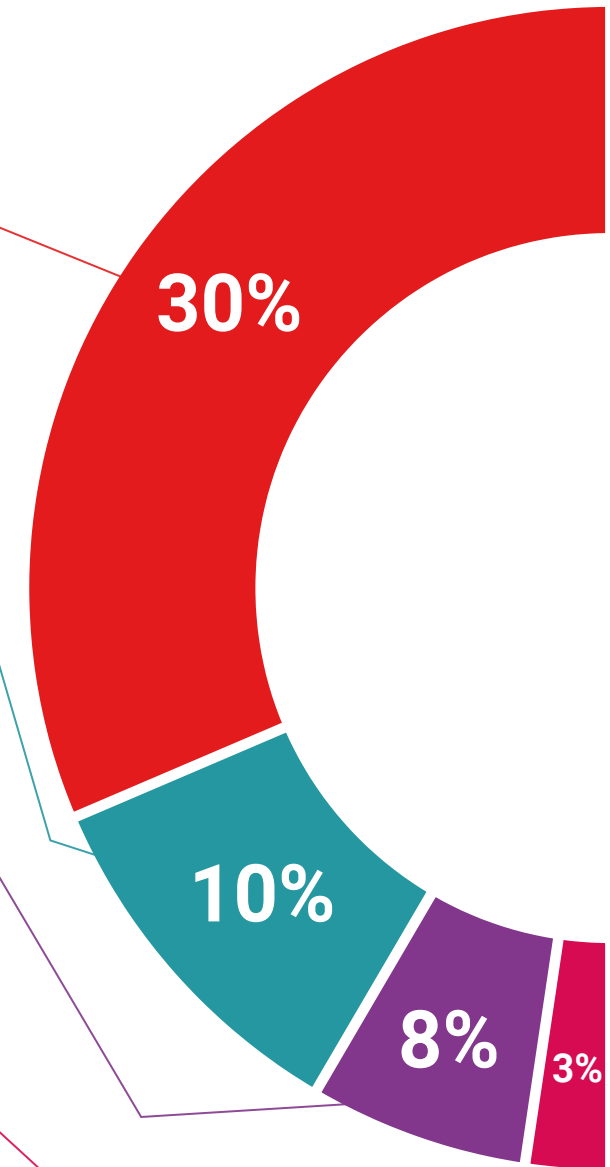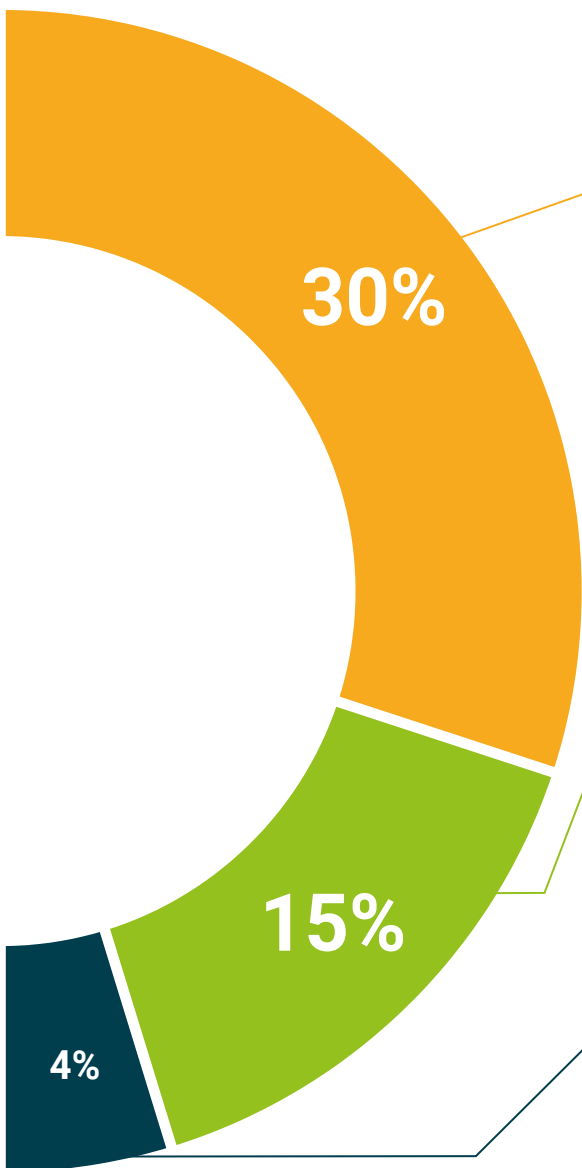
Case Studies

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

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.

Our Students' Profiles

This Postgraduate Certificate in Data Processing, Exploratory Analysis and Preprocessing is aimed at all professionals who wish to advance their working methods and procedures in companies or businesses. In order to obtain the data that will facilitate the achievement of their objectives through optimal and effective solutions in an environment differentiated by the use of *Business Intelligence* techniques.
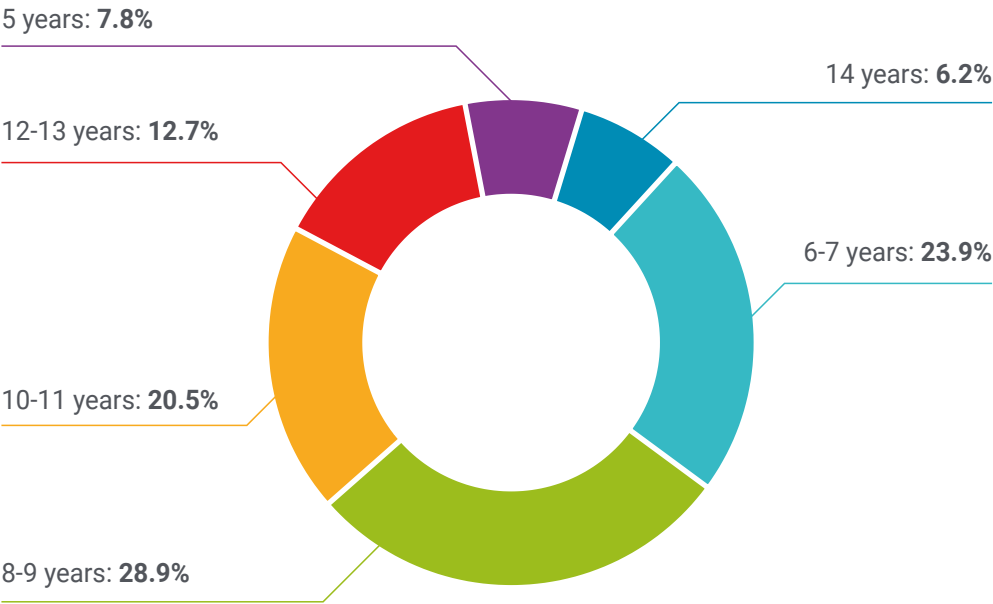
"If you want to master everything related to data processing and analysis this program is for you"

Average Age

Between **35** and **45** years old

Training

Business **40%**
Computer Science **30%**
Other Engineering **15%**
Social Sciences **17%**
Other **8%**

Years of Experience

5 years: **7.8%**
12-13 years: **12.7%**
10-11 years: **20.5%**
8-9 years: **28.9%**
14 years: **6.2%**
6-7 years: **23.9%**

Educational Profile

Computer Science **23%**
Business **30%**
Entrepreneurship **27%**
Other **20%**
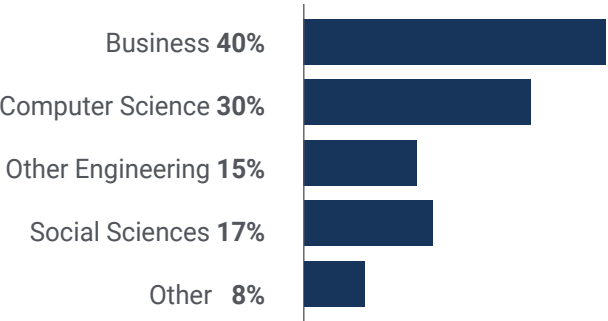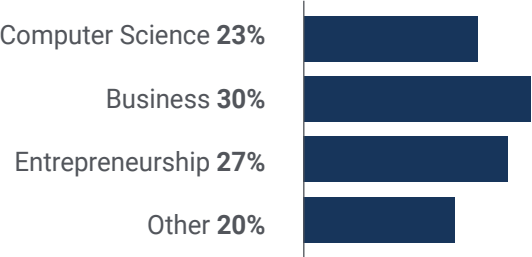
Geographical Distribution

USA **12%**
Spain **40%**
Mexico **20%**
Colombia **7%**
Argentina **10%**
Chile **3%**
Peru **2%**
Others **6%**
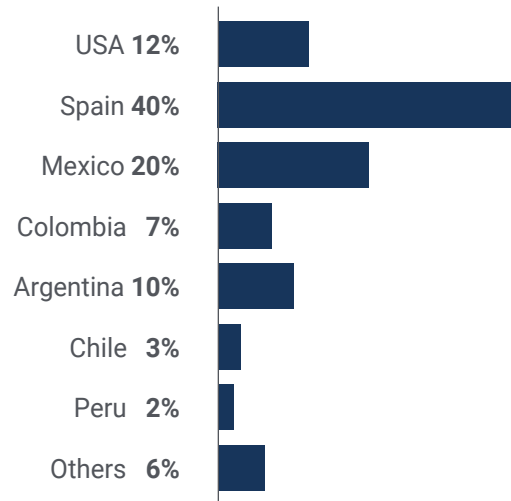
Adolfo Martin Herrera

Business Advisor

"I have contributed a lot to the business since I decided to focus my efforts to specialize in this TECH professionalization program. The ease with which the practical case studies are presented, the support of the teachers and the online modality made my training process dynamic. 100% recommendable for those who wish to advance in their professional career"

08
Course Management

TECH Technological University has a large and experienced faculty to guarantee excellence and an elite education. For this program we have chosen experts in the area of business, technology and finance who have joined this program to offer the student, their experiences and all the essential knowledge to perform efficiently and effectively Data Processing, Exploratory Analysis and Preprocessing. With the purpose of providing optimal solutions within your company or business.

Expert educators will provide you with all the knowledge you need to understand data analytics and its importance in the business world"

Management

Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO en Corporate Technologies in Corporate Technologies
- CTO in AI 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. Montoro Montarroso, Andrés

- Researcher in the SMILe Group at the University of Castilla-La Mancha
- Data Scientist at Prometeus Global Solutions
- Graduate in Computer Engineering from the University of Castilla-La Mancha
- Master's Degree in Data Science and Computer Engineering from the University of Granada
- Guest lecturer in the subject of Knowledge-Based Systems at the Escuela Superior de Informática de Ciudad Real, Giving the Lecture "Advanced Artificial Intelligence Techniques: Search and Analysis of Potential Social Media Radicals"
- Guest lecturer in the subject of Data Mining at the Escuela Superior de Informática de Ciudad Real giving the lecture: "Applications of Natural Language Processing: Fuzzy Logic to the analysis of messages in social networks"
- Speaker at the Seminar on Corruption Prevention in Public Administrations and Artificial Intelligence. Faculty of Law and Social Sciences of Toledo. Conference entitled "Artificial Intelligence Techniques". Speaker at the first International Seminar on Administrative Law and Artificial Intelligence (DAIA). Organised by Centro de Estudios Europeos Luis Ortega Álvarez and Institut de Recerca TransJus. Conference entitled "Sentiment Analysis for the prevention of hate speech on social media"

09
Impact on Your Career

More and more organizations are valuing the information obtained from the analysis of large amounts of data for their decision making and strategies to be implemented. Therefore, there is an increasing demand for professionals who are able to gather, select, examine and interpret such data.

It is then the opportunity for all those who wish to broaden their professional horizons and make their way in front of the advances in the study of Big Data and data mining in the business world.

You will be a professional who gives value to the company with the development of exploratory analysis and data processing in an optimal way"

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

The Postgraduate Certificate in Data Processing. Exploratory Analysis and TECH Preprocessing is an intensive program that prepares you to develop specialized knowledge to study all the solutions that the most advanced BI techniques can provide. The main objective is to promote your personal and professional growth. Helping you achieve success.

If you want to improve, make a positive change at a professional level and network with the best, then this is the place for you.

With this Postgraduate Certificate you will find what you were waiting for. Don't wait any longer and improve your skills.

A skilled professional who provides the best solutions is guaranteed success. Translated into better salaries.

Time of Change

During the program	During the first year	After 2 years
23%	**21%**	**56%**

Type of Change

Internal Promotion **43%**

Change of Company **32%**

Entrepreneurship **25%**
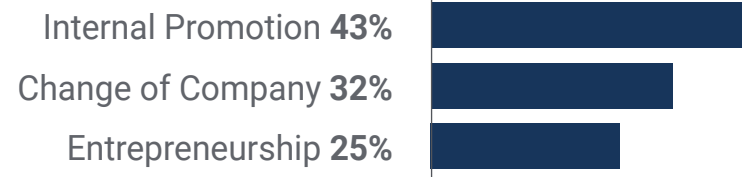
Salary Increase

This program represents a salary increase of more than **25.22%** for our students.

Salary before	A salary increase of	Salary after
€32,900	**25.22%**	**€41,200**

10

Benefits for Your Company

The Postgraduate Certificate in Data Processing. Exploratory Analysis and Preprocessing, contributes to find efficient solutions in specific situations. This translates into effectiveness for the business and results that are in line with its strategic planning. Raising the organizational level against the current landscape and market demands by understanding the new horizons facing the emergence of collaborative mining, the evolution of the scorecard, the increase of data lineage and explainable BI. Participating in this program means only growth opportunities for new leaders and a better organizational structure.

" *It is undeniable that the oil of the 21st century is data and just like data, it needs to be "refined" for use. Learn now the most advanced techniques to achieve it"*

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

01

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.

02

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.

03

Building agents of change

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

04

Increased international expansion possibilities

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

05 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.

06 Increased competitiveness

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

11
Certificate

The Postgraduate Certificate in Data Processing. Exploratory Analysis and Preprocessing 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"
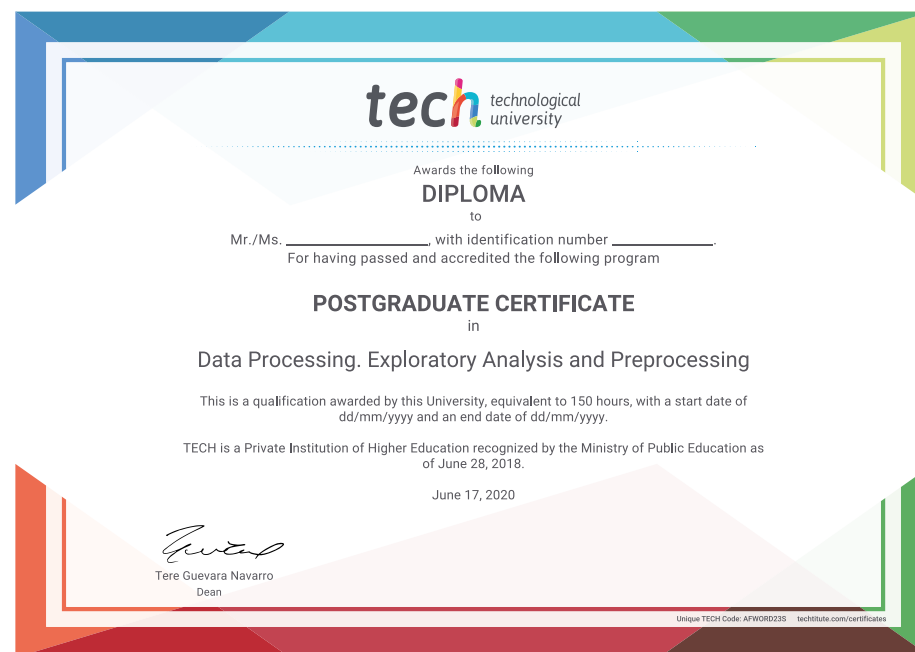
This **Postgraduate Certificate in Data Processing. Exploratory Analysis and Preprocessing** contains the most complete and up-to-date program on the market.

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: **The Postgraduate Certificate in Data Processing. Exploratory Analysis and Preprocessing**

Official Nº of Hours: **150 h.**

tech technological university

Awards the following
DIPLOMA
to
Mr./Ms. _____, with identification number _____.
For having passed and accredited the following program

POSTGRADUATE CERTIFICATE
in

Data Processing. Exploratory Analysis and Preprocessing

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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