Postgraduate Diploma
Data Analysis Techniques

tech technological university

tech technological university

Postgraduate Diploma
Data Analysis Techniques

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

Website: www.techtitute.com/in/information-technology/postgraduate-diploma/postgraduate-diploma-data-analysis-techniques

Index

01 Introduction p. 4

02 Objectives p. 8

03 Course Management p. 12

04 Structure and Content p. 16

05 Methodology p. 20

06 Certificate p. 28

01

Introduction

The Data Analysis Techniques program is a complete educational program, designed to provide students with the necessary skills to act with the confidence of an expert in data analysis. With the exceptional quality of TECH, the largest Spanish-language university in the online teaching market.

Learn the essential data analysis techniques from the best, to bring the capabilities of this type of work to your company".

This Postgraduate Diploma will give students a complete overview of the latest technologies used in working with Big Data and Artificial Intelligence. A comprehensive compilation of advances, novelties and work tools that will take students through the most intensive course, to prepare them for current star profiles.

Throughout this program, students will learn about everything needed to analyze data with the development of different existing techniques. In addition, TECH will show how to capture data and store it properly in each case.

From the most qualified professors, with the best educational systems and the security and solvency of the best online university of its time.

This **Postgraduate Diploma in Data Analysis Techniques** contains the most complete and up-to-date educational program on the market. The most important features of the program include:

- Practical case studies presented by experts
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice.
- Practical exercises where self-assessment can be used to improve learning.
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

A comprehensive update that will provide you with the working capacity of a specialist in the field"

All necessary aspects to use data visualization techniques, in a high-quality course".

This program has the best educational resources that can be accessed online or downloaded, to make it easier for you to manage your studies and effort.

A highly comprehensive program, created with the objective of delivering the highest quality education, raising our students to the highest level of proficiency.

Its teaching staff includes professionals from the sector who bring their work experience to this program, in addition to recognized specialists from leading societies and universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide an immersive program designed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

Objectives

The objectives of this Postgraduate Diploma have been established based on realistic and necessary goals for professionals in the sector. Students will be able to progressively verify their learning and progress in the mastery of the contents so that, at the end of the course, they will have achieved professional growth.

Realistic, achievable and high-impact goals for your professional training".

General Objectives

- Analyze the data produced and draw conclusions using statistical tools to make the most appropriate decisions at all times
- Learn the introductory concepts of statistics; statistical reasoning; representing relationships between different variables, among others.
- Acquire in-depth knowledge of the principles of probability that are the basis for inferential statistics, which will allow us to contrast conjectures (hypothesis testing) about what a given population is like.
- Understand information sources and the value they bring to the creation of new innovative business models.
- Know and use statistical tools to solve problems in the *Big Data* field.
- Know how the combination of all the data flowing through the Internet can be combined in order to define new strategies applicable to different industrial, business, financial sectors, etc., within different fields, such as energy, health, economy or communication.
- Learn the different techniques for data analysis and exploitation and visualization and interaction techniques, all closely linked to the role of *Data Scientists* and their contribution to the anticipation and vision for the execution of innovation processes that allow for efficient changes in organizations.
- Assimilate concepts, techniques, methodologies and knowledge of languages that will be useful to apply in big data mining.
- Further study Artificial Intelligence algorithms and techniques such as decision trees, classification and association rules, neural networks or *Deep Learning*
- Apply *Data Mining* tools to solve learning problems, interpreting the results obtained, as well as the ability to design an intelligent system capable of inferring new knowledge.
- Understand databases, from traditional to unstructured, where data requiring other types of processing, such as audio or video streams, will be stored.
- Learn about the importance of having cloud computing for processing large volumes of data and how all this *Big Data* can be ingested into tools that allow us to obtain and infer patterns in seemingly unrelated data.
- Delve into the *Hadoop framework* and its file system HDFS (*Hadoop Distributed File System*), which provides tools and techniques for distributed storage and processing of large amounts of data.
- Know how to apply tools for parallel processing: MapReduce, devised by Google, or Spark, now under the auspice of the *Apache Software Foundation*
- Understand how high-performance, low-latency platforms work for real-time manipulation of data sources that need to respond to service demands operating in the millisecond range.

Specific Objectives

Module 1. Data Analysis and Interpretation

- Know the different theories for data analysis and interpretation
- Identify the most common descriptors for a dataset
- Understand and evaluate the applicability of different descriptors to an existing dataset
- Know how to carry out hypothesis testing and its applicability to the world of data analysis.
- Learn how to interpret the different existing regression techniques

Module 2. Data Analysis Techniques and AI

- Understand the different techniques for data analysis
- Design joint strategies of statistical and artificial intelligence techniques for the development of descriptive and predictive systems applied to the reality of a dataset
- Understand the operation and characteristics of common mass data processing techniques
- Identify techniques oriented to statistical analysis, artificial intelligence and mass data processing.

Module 3. Data Analysis Tools

- Know the environments most used by *Data Scientists*
- Know how to process data in different formats from different sources
- Learn from the need to guarantee the veracity of the data as a prior step to its processing
- Identify new technologies as pedagogical tools in the communication of the different business realities.
- Know the latest trends in the creation of intelligent entities based on *Deep Learning* and neural networks.

Module 4. Database Management and Data Parallelization Systems

- Know the artificial intelligence techniques applicable for massively parallelized data processing on a given data set and according to previously defined requirements
- Know how to manage large volumes of data in a distributed manner
- Understand the operation and characteristics of common mass data processing techniques
- Identify commercial and open software tools oriented to statistical analysis, artificial intelligence and mass data processing.

A stimulating journey of professional growth designed to keep you interested and motivated throughout the entire program"

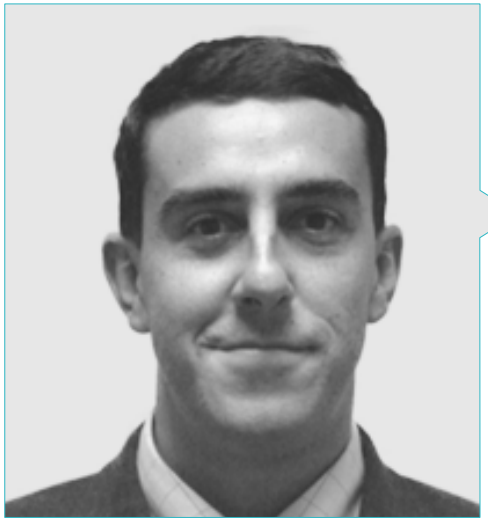
03

Course Management

Within the quality criteria that we apply in all our programs, this Postgraduate Certificate offers you the opportunity to learn from the best, with a teaching faculty made up of professionals in the sector who will invest their theoretical and practical knowledge to take you to the highest level of proficiency. With the latest and most effective teaching methods on the online teaching market.

Learn with the best and acquire the knowledge and skills you need to intervene in this area of development with total success"

Management



Mr. Galindo, Luis Ángel

- Senior High-Performance Consultant with 16 years of experience
- Definition, development and implementation of a successful open innovation model, with +10% year-on-year revenue growth leveraged on innovative assets
- Definition, development and implementation of successful Digital Transformation Programs for more than 8 years and 700+ people leading a pioneering role in the industry.
- Implementation of 20+ complex consulting projects worldwide for large companies in artificial intelligence, economic intelligence, cybersecurity, business development, digital transformation, risk assessment, process optimization and people management
- Expert in understanding customers and translating their needs into actual sales

Professors

Mr. Almansa, Antonio

- Design, implementation and integration of the Julian Camarillo DC contingency center
- Senior Technician: operation, engineering and architecture of the Data Center (DC) networks located in Independencia and Orduña, as well as the transport network at national level for tariffs and discharges.
- *Level 2 Expert*: design and implementation of the networks (with technological change) of the DC of Fco. Sancha and later Manuel Tovar

Ms. Cordero García, Marta

- University Professor, Polytechnic School of Madrid
- Aerospace Engineering Department: Mathematics Applied to Aerospace Engineering

Mr. García, Felipe

- Founding Partner and President of KNOWDLE AI TECHNOLOGIES GROUP
- President promoter of the KNOWDLE CONSORTIUM GROUP ASSOCIATION
- Promoter and President of the KNOWDLE Foundation for Open Knowledge Bio Inspired
- FOUNDATION & RESEARCH INSTITUTE with an ecosystem of startups in acceleration under the same technology of Collective Artificial Intelligence
- Degree in IT from the Polytechnic University of Madrid
- Doctoral Thesis on "Wisdom Collective Intelligence"

04

Structure and Content

The syllabus of this Postgraduate Diploma is configured as a complete tour through each and every one of the knowledge necessary to understand and assume the ways of working in this field. With an approach focused on practical application that will help you grow as a professional from the very first moment.

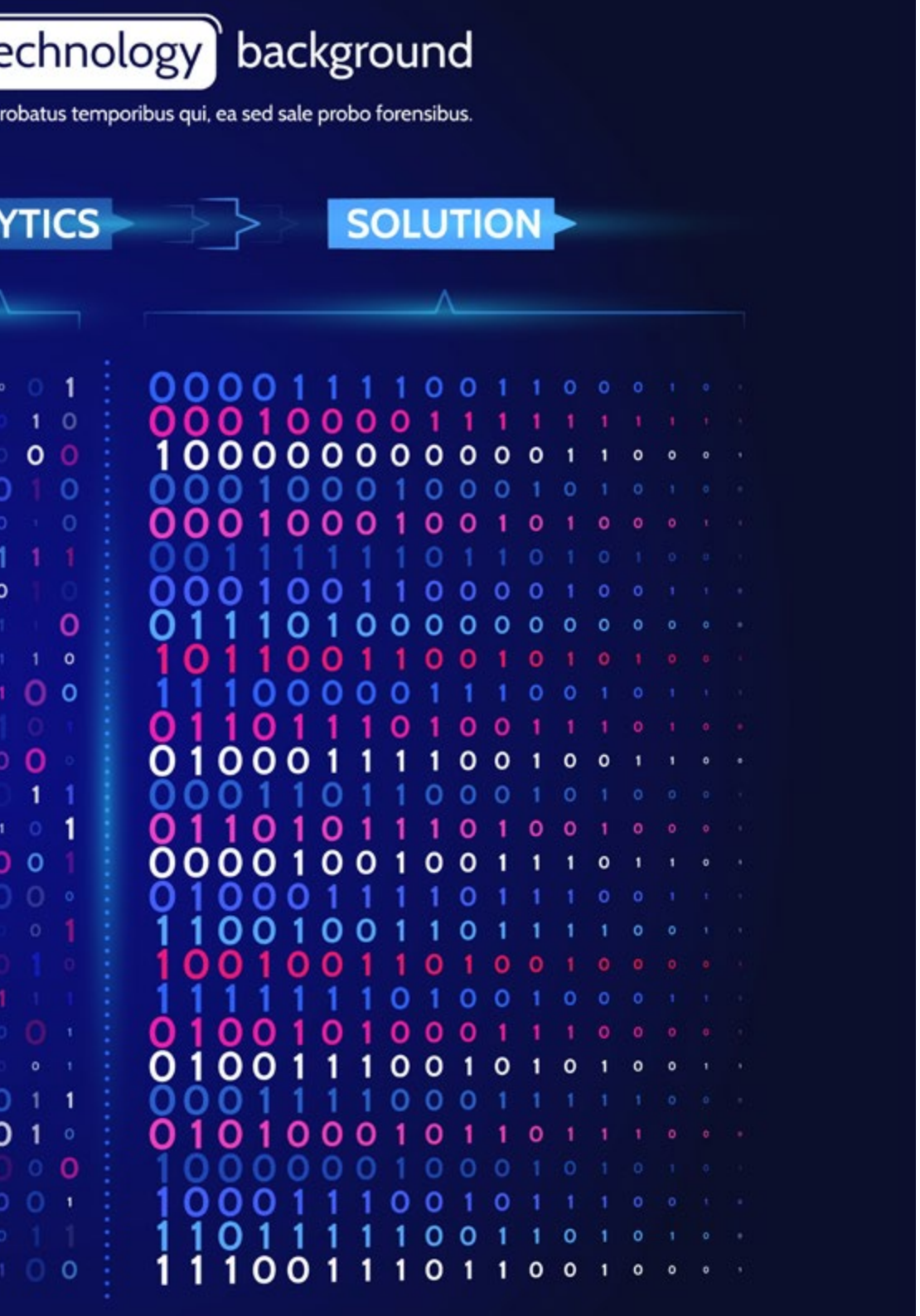
A comprehensive syllabus focused on acquiring knowledge and converting it into real skills, created to propel you to excellence"

Module 1. Data Analysis and Interpretation

1.1. Introduction to Statistics
1.2. Measures Applicable to the Processing of Information
1.3. Statistical Correlation
1.4. Theory of Conditional Probability
1.5. Random Variable and Probability Distribution
1.6. Bayesian Inference
1.7. Sample Theory
1.8. Confidence Intervals
1.9. Hypothesis Testing
1.10. Regression Analysis

Module 2. Data Analysis Techniques and AI

2.1. Predictive Analytics
2.2. Evaluation Techniques and Model Selection
2.3. Lineal Optimization Techniques
2.4. Monte Carlo Simulations
2.5. Scenario Analysis
2.6. *Machine Learning* Techniques
2.7. Web Analytics
2.8. *Text Mining* Techniques
2.9. Methods of Natural Language Processing (NLP)
2.10. Social Media Analytics



Module 3. Data Analysis Tools

3.1. *Data Science* R Environment
3.2. *Data Science* Python Environment
3.3. Static and Statistical Graphs
3.4. Data Processing in Different Formats and Different Sources
3.5. Data Cleaning and Preparation
3.6. Exploratory Studies
3.7. Decision Trees
3.8. Classification and Association Rules
3.9. Neural Networks
3.10. *Deep Learning*

Module 4. Database Management and Data Parallelization Systems

4.1. Conventional Databases
4.2. Non-Conventional Databases
4.3. *Cloud Computing*: distributed data management
4.4. Tools for the Ingestion of Large Volumes of Data
4.5. Types of Parallels
4.6. Data Processing in *Streaming* and Real Time
4.7. Parallel Processing: Hadoop
4.8. Parallel Processing: Spark
4.9. Apache Kafka
    4.9.1. Introduction to Apache Kafka
    4.9.2. Architecture
    4.9.3. Data Structure
    4.9.4. Kafka APIs
    4.9.5. Use Cases
4.10. Cloudera Impala

05

Methodology

This academic program offers students a different way of learning. Our methodology follows a cyclical learning process***: Relearning.***

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the ***New England Journal of Medicine*** have considered it to be one of the most effective.

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

Case Study to contextualize all content

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

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

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

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

A learning method that is different and innovative.

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

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

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

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

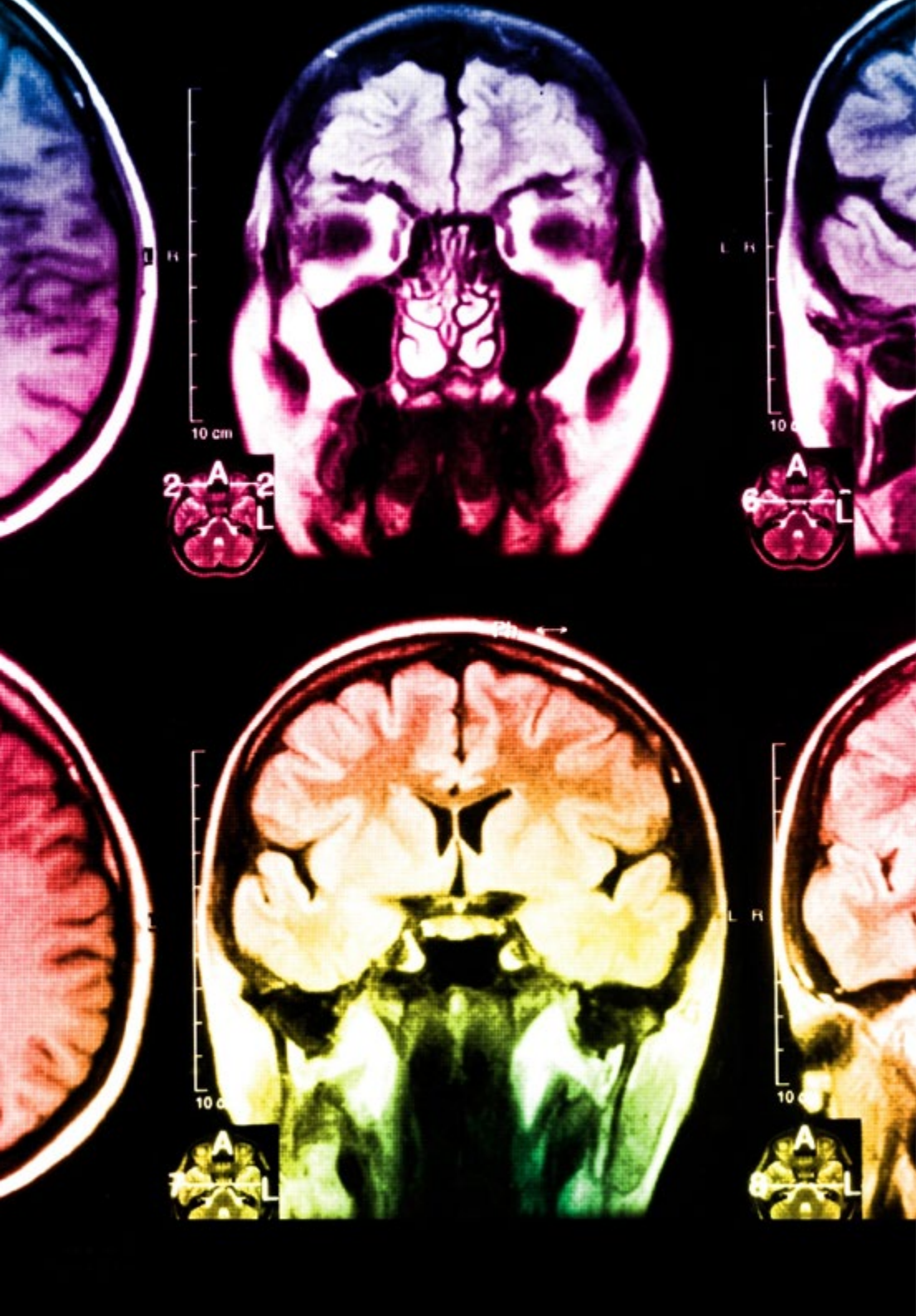
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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

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

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

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



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

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

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

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

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

Study Material

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

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

Classes

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

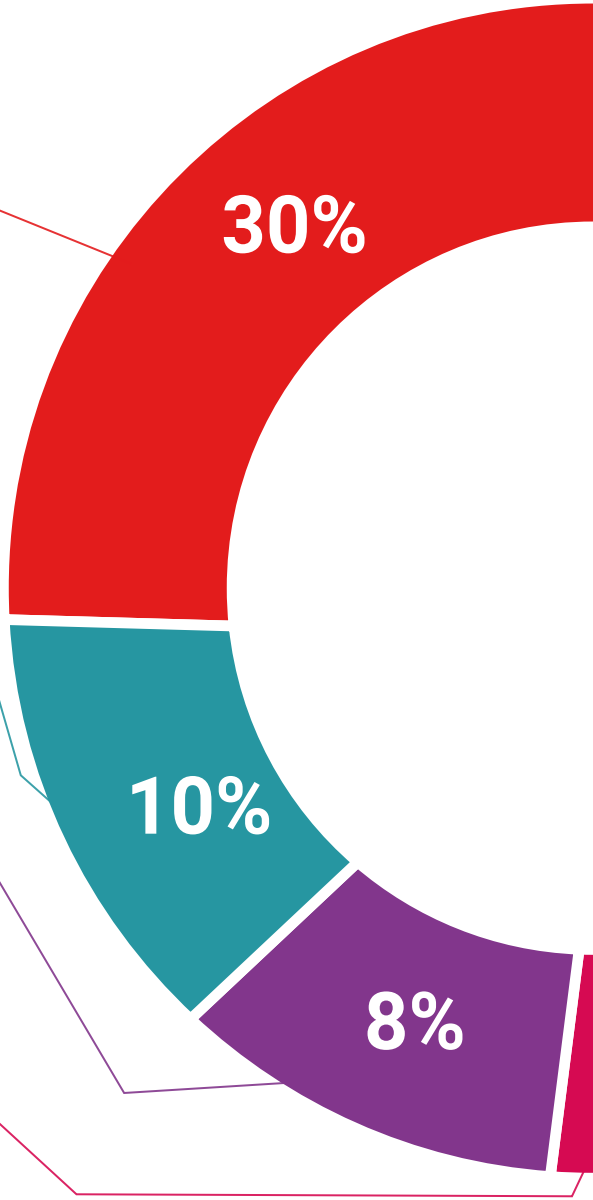
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

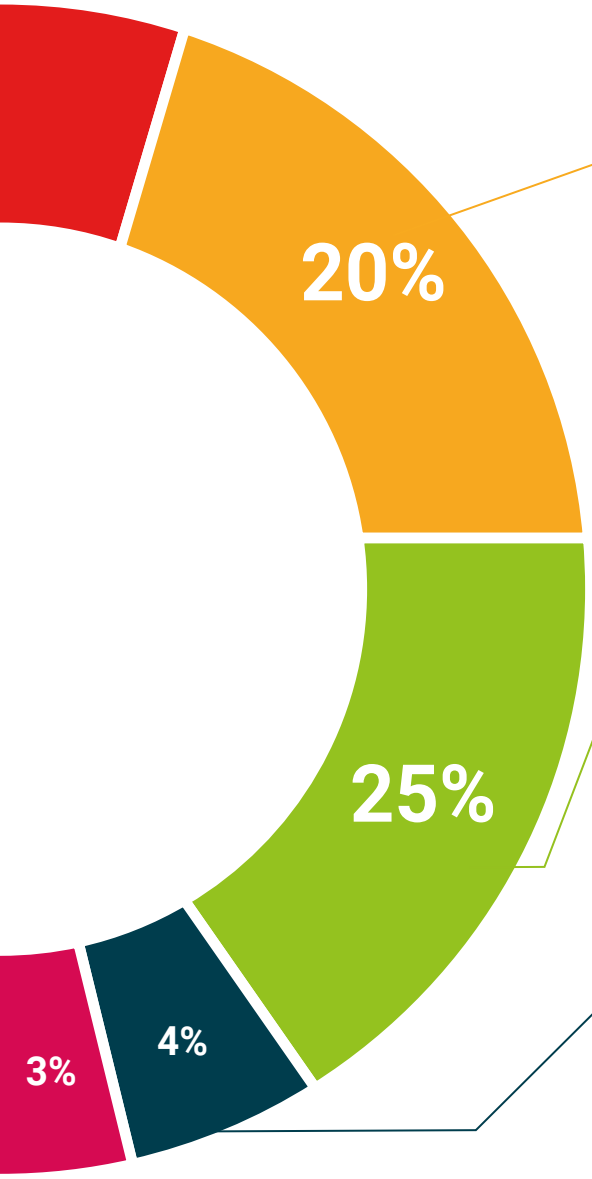
Practising Skills and Abilities

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

Additional Reading

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





Case Studies

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

Interactive Summaries

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

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

Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.

06

Certificate

This Postgraduate Diploma in Data Analysis Techniques guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma 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 Diploma in Data Analysis Techniques** 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 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 meet the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees

Title: **Postgraduate Diploma in Data Analysis Techniques**

Official Nº of Hours: **600 hours.**


tech technological university

Awards the following

CERTIFICATE

to

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

For having passed and accredited the following program

POSTGRADUATE DIPLOMA

in

Diploma in Data Analysis Techniques

This is a qualification awarded by this University, equivalent to 600 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 certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

tech technological university

Postgraduate Diploma
Data Analysis Techniques

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

Postgraduate Diploma
Data Analysis Techniques

tech technological university