Executive Master's Degree

Data Science Management and the Data Science Officer

MDSMDSO

tech technological university

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Executive Master's Degree
Data Science Management and the Data Science Officer

Language: **English**

Course Modality: **Online**

Duration: **12 months.**

Certificate: **TECH Technological University**

Official Nº of hours: **1,500 h.**

Target Group: **University graduates and postgraduates who have completed a degree in computer engineering.**

Website: **www.techtitute.com/pk/school-of-business/professional-master-degree/master-data-science-management-data-science-officer**

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01

Welcome

The correct flow of data is essential to ensure the safe and proper functioning of processes. To this end, companies need senior managers who are Data Science Officers (DSO), a rising professional profile capable of designing and implementing the strategy for data use and processing (using predictive and profitability models, data processing, machine learning, process optimization, etc.). Aware of this reality, the TECH team launches this program that focuses on providing managers with the knowledge, methods, technologies and phases for data analytics, not only from a technical perspective, but with a clear and marked business orientation. Maximizing processes, mitigating risks and saving costs to the organization. All this, condensed in a program that stands out not only for its broad professional orientation, but also for the quality of its contents, taught 100% online, and compatible with professional and personal life.

Executive Master's Degree in Data Science Management and the Data Science Officer.
TECH Technological University

With this program, you will be able to design and implement an effective data management strategy. This will enable you to be a successful Data Science Officer (DSO)"

02

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 centre for intensive managerial skills training.

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 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+
executives trained 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.

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"

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.

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 training of the highest academic level"

This program will provide students with a multitude of professional and personal advantages, particularly the following:

01

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.

02

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.

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

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 areas 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

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.

04

Objectives

To be a successful manager, it takes much more than just technical knowledge. For this reason, the teaching team of this program has designed the most complete contents of the current academic scenario with a clear objective: to offer a rigorous and transversal education that not only focuses on the theoretical and functional aspects of data management, but also on the requirements and demands of the business market. In this way, the Data Science Officer will be able to propose, design and establish the lines of action of a data strategy that maximizes profitability, minimizes costs and helps the company to achieve its objectives. A perspective of study and only available in TECH.

At TECH you can meet your goals and develop as an IT department manager and make strategic decisions to improve business management"

Your goals are our goals.
We work together to help you achieve them.

The **Executive Master's Degree in Data Science Management and the Data Science Officer** enable students to:

01 Analyze the benefits of applying data analytics techniques in each department of the company

02 Develop the basis for understanding the needs and applications of each department

03 Generate specialized knowledge to select the right tool

04 Propose techniques and objectives in order to be as productive as possible according to the department

05 Develop analytical skills in order to make quality decisions

06 Examine effective marketing and communication campaigns

07 Perform data analyses

08 Unify diverse data: Achieving consistency of information

09 Produce relevant, effective information for decision making

10 Identify theIoT (Internet of Things) and IIoT (Industrial Internet of Things)

11 Examine the Industrial Internet Consortium

12 Generate specialized knowledge in data analysis and representation

13 Develop the skills to convert data into information from which knowledge can be extracted

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

15 Generate specialized knowledge about the statistical prerequisites for any data analysis and evaluation

16 Develop the formulation and basic properties of univariate time series models

17 Examine metrics and scores to quantify model quality

18 Evaluate which widely used applications use the fundamentals of distributed systems to design their systems

19 Generate a better understanding of the technology through use cases

20 Analyze the chosen strategies to select the best technologies to implement

05

Skills

After completing the assessments of this program, the professionals will see an increase in their capabilities in the use of specific models for data management. Thanks to these new skills, they will be able to position themselves as a prestigious DSO, reaching positions of high responsibility in companies of all sizes. A leap in the knowledge of the managers that will catapult them in the achievement of their professional, personal and economic objectives. For all these reasons, this Executive Master's Degree is positioned as a unique opportunity for the student's professional growth.

Increase your skills and become a Data Science Officer with critical and investigative thinking based on the new paradigms of data analysis"

01 Develop a technical and business perspective of data analysis

02 Understand the most current algorithms, platforms and tools for data exploration, visualization, manipulation, processing, and analysis

03 Implementing a business vision necessary for valorization as a key element for decision making

04 Be able to address problems specific to data analysis

05 Specialize in Data Science from a technical and business perspective

06 Visualize data in the most appropriate way to favor data sharing and understanding for different profiles

07 Address the key functional areas of the organization where data science can deliver the most value

08 Develop knowledge of the data life cycle, its typology and the technologies and phases necessary for its management

09 Process and manipulate data using specific languages and libraries

10 Develop advanced knowledge in fundamental data mining techniques for data selection, pre-processing and transformation

06

Structure and Content

The syllabus of this program covers the knowledge required to work as a Data Science Officer: from data analytics in the company, to architectures and systems for intensive use of data, among other issues. All this, from a practical perspective, with content presented in multimedia format and 100% online. This facilitates the consolidation of knowledge and the compatibility of study with other day to day tasks.

TECH offers you an academic model based on high quality content, presented in multimedia format and 100% online. A system in line with the needs of today's manager and one that is breaking the foundations of online university education"

Syllabus

As companies grow, so does their need to manage data efficiently. To this end, they must have a Data Science Officer on their staffs, a multi-skilled profile not only capable of managing the technical aspects of data management, but also the economic and resource management issues in the organization. Specifically, the CTO should be responsible for establishing policies and procedures for data management, working cross-functionally with the rest of the company's departments to obtain, prepare, organize, protect and analyze data so that it can be used to improve all areas of the business.

For this reason, and thinking about the needs of the current labor market, TECH launches this program where the different algorithms, platforms and the most current tools for the exploration, visualization, manipulation, processing and analysis of data, complemented, in addition, with the necessary business vision for its value as a key element for decision making.

The entire content of the program is designed to enhance the specific technical skills of professionals interested in the problems involved in data analytics and its subsequent transformation into knowledge.

In addition, and throughout the 1,500 hours of the program, the student will analyze different practical cases through individual practice and teamwork. Therefore, it is a real immersion of real business situations integrated into the online academic process.

This Executive Master's Degree is a 12-month program and is divided into 10 modules:

Module 1	Data Analysis in a Business Organization
Module 2	Data Management, Data Manipulation and Information Management for Data Science
Module 3	Devices and IoT Platforms as a Base for Data Science
Module 4	Graphical Representation of Data Analysis
Module 5	Data Science Tools
Module 6	Data Mining: Selection, Pre-Processing and Transformation
Module 7	Predictability and Analysis of Stochastic Phenomena
Module 8	Design and Development of Intelligent Systems
Module 9	Architecture and Systems for Intensive Use of Data
Module 10	Practical Application of Data Science in Business Sectors

Where, When and How is it Taught?

TECH offers the possibility of developing this Executive Master's Degree in Data Science Management and the Data Science Officer 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 Analysis in a Business Organization

1.1. Business Analysis
1.1.1. Business Analysis
1.1.2. Data Structure
1.1.3. Phases and Elements

1.2. Data Analysis in the Business
1.2.1. Scorecards and KPIs by Departments
1.2.2. Operational, Tactical and Strategic Reports
1.2.3. Data Analytics Applied to Each Department
1.2.3.1. Marketing and Communication
1.2.3.2. Commercial
1.2.3.3. Customer Service
1.2.3.4. Purchasing
1.2.3.5. Administration
1.2.3.6. HR
1.2.3.7. Production
1.2.3.8. IT

1.3. Marketing and Communication
1.3.1. KPIs to be Measured, Applications and Benefits
1.3.2. Marketing Systems and Data Warehouse
1.3.3. Implementation of a Data Analytics Framework in Marketing
1.3.4. Marketing and Communication Plan
1.3.5. Strategies, Prediction and Campaign Management

1.4. Commerce and Sales
1.4.1. Contributions of Data Analytics in the Commercial Area
1.4.2. Needs of the Sales Department
1.4.3. Market Research

1.5. Customer Service
1.5.1. Loyalty
1.5.2. Personal Coaching and Emotional Intelligence
1.5.3. Customer Satisfaction

1.6. Purchasing
1.6.1. Data Analysis for Market Research
1.6.2. Data Analysis for Competency Research
1.6.3. Other Applications

1.7. Administration
1.7.1. Needs of the Administration Department
1.7.2. Data Warehouse and Financial Risk Analysis
1.7.3. Data Warehouse and Credit Risk Analysis

1.8. Human Resources
1.8.1. HR and the Benefits of Data Analysis
1.8.2. Data Analytics Tools in the HR Department
1.8.3. Data Analytics Applications in the HR Department

1.9. Production
1.9.1. Data Analysis in a Production Department
1.9.2. Applications
1.9.3. Benefits

1.10. IT
1.10.1. IT Department
1.10.2. Data Analysis and Digital Transformation
1.10.3. Innovation and Productivity

Module 2. Data Management, Data Manipulation and Information Management for Data Science

2.1. Statistics. Variables, Indices and Ratios
2.1.1. Statistics
2.1.2. Statistical Dimensions
2.1.3. Variables, Indices and Ratios

2.2. Type of Data
2.2.1. Qualitative
2.2.2. Quantitative
2.2.3. Characterization and Categories

2.3. Data Knowledge from the Measurements
2.3.1. Centralization Measurements
2.3.2. Measures of Dispersion
2.3.3. Correlation

2.4. Data Knowledge from the Graphs
2.4.1. Visualization According to Type of Data
2.4.2. Interpretation of Graphic Information
2.4.3. Customization of graphics with R

2.5. Probability
2.5.1. Probability
2.5.2. Function of Probability
2.5.3. Distributions

2.6. Data Collection
2.6.1. Methodology of Data Collection
2.6.2. Data Collection Tools
2.6.3. Data Collection Channels

2.7. Data Cleaning
2.7.1. Phases of Data Cleansing
2.7.2. Data Quality
2.7.3. Data Manipulation (with R)

2.8. Data Analysis, Interpretation and Evaluation of Results
2.8.1. Statistical Measures
2.8.2. Relationship Indices
2.8.3. Data Mining

2.9. Data Warehouse
2.9.1. Components
2.9.2. Design

2.10. Data Availability
2.10.1. Access
2.10.2. Uses
2.10.3. Security/safety

Module 3. Devices and IOT Platforms as a Base for Data Science

3.1. Internet of Things
3.1.1. Internet of the Future, Internet of Things
3.1.2. The Industrial Internet Consortium

3.2. Architecture of Reference
3.2.1. The Architecture of Reference
3.2.2. Layers
3.2.3. Components

3.3. Sensors and IoT Devices
3.3.1. Principal Components
3.3.2. Sensors and Actuators

3.4. Communications and Protocols
3.4.1. Protocols. OSI Model
3.4.2. Communication Technologies

3.5. Cloud Platforms for IoT and IIoT
3.5.1. General Purpose Platforms
3.5.2. Industrial Platforms
3.5.3. Open Code Platforms

3.6. Data Management on IoT Platforms
3.6.1. Data Management Mechanisms. Open Data
3.6.2. Data Exchange and Visualization

3.7. IoT Security
3.7.1. Requirements and Security Areas
3.7.2. Security Strategies in IIoT

3.8. Applications of IoT
3.8.1. Intelligent Cities
3.8.2. Health and Fitness
3.8.3. Smart Home
3.8.4. Other Applications

3.9. Applications of IIoT
3.9.1. Fabrication
3.9.2. Transport
3.9.3. Energy
3.9.4. Agriculture and Livestock
3.9.5. Other Sectors

3.10. Industry 4.0
3.10.1. IoRT (Internet of Robotics Things)
3.10.2. 3D Additive Manufacturing
3.10.3. Big Data Analytics

Module 4. Graphical Representation of Data Analysis

4.1. Exploratory Analysis
4.1.1. Representation for Information Analysis
4.1.2. The Value of Graphical Representation
4.1.3. New Paradigms of Graphical Representation

4.2. Optimization for Data Science
4.2.1. Color Range and Design
4.2.2. Gestalt in Graphic Representation
4.2.3. Errors to Avoid and Advice

4.3. Basic Data Sources
4.3.1. For Quality Representation
4.3.2. For Quantity Representation
4.3.3. For Time Representation

4.4. Complex Data Sources
4.4.1. Files, Lists and Databases
4.4.2. Open Data
4.4.3. Continuous Data Generation

4.5. Types of Graphs
4.5.1. Basic Representations
4.5.2. Block Representation
4.5.3. Representation for Dispersion Analysis
4.5.4. Circular Representations
4.5.5. Bubble Representations
4.5.6. Geographical Representations

4.6. Types of Visualization
4.6.1. Comparative and Relational
4.6.2. Distribution
4.6.3. Hierarchical

4.7. Report Design with Graphic Representation
4.7.1. Application of Graphs in Marketing Reports
4.7.2. Application of Graphs in Scorecards and KPIs
4.7.3. Application of Graphs in Strategic Plans
4.7.4. Other Uses: Science, Health, Business

4.8. Graphic Narration
4.8.1. Graphic Narration
4.8.2. Evolution
4.8.3. Uses

4.9. Tools Oriented Towards Visualization
4.9.1. Advanced Tools
4.9.2. Online Software
4.9.3. Open Source

4.10. New Technologies in Data Visualization
4.10.1. Systems for Virtualization of Reality
4.10.2. Reality Enhancement and Improvement Systems
4.10.3. Intelligent Systems

Module 5. Data Science Tools

5.1. Data Science
5.1.1. Data Science
5.1.2. Advanced Tools for Data Scientists

5.2. Data, Information and Knowledge
5.2.1. Data, Information and Knowledge
5.2.2. Types of Data
5.2.3. Data Sources

5.3. From Data to Information
5.3.1. Data Analysis
5.3.2. Types of Analysis
5.3.3. Extraction of Information from a Dataset

5.4. Extraction of Information Through Visualization
5.4.1. Visualization as an Analysis Tool
5.4.2. Visualization Methods
5.4.3. Visualization of a Data Set

5.5. Data Quality
5.5.1. Quality Data
5.5.2. Data Cleaning
5.5.3. Basic Data Pre-Processing

5.6. Dataset
5.6.1. Dataset Enrichment
5.6.2. The Curse of Dimensionality
5.6.3. Modification of Our Data Set

5.7. Unbalance
5.7.1. Classes of Unbalance
5.7.2. Unbalance Mitigation Techniques
5.7.3. Balancing a Dataset

5.8. Unsupervised Models
5.8.1. Unsupervised Model
5.8.2. Methods
5.8.3. Classification with Unsupervised Models

5.9. Supervised Models
5.9.1. Supervised Model
5.9.2. Methods
5.9.3. Classification with Supervised Models

5.10. Tools and Good Practices
5.10.1. Good Practices for Data Scientists
5.10.2. The Best Model
5.10.3. Useful Tools

Module 6. Data Mining. Selection, Pre-Processing and Transformation

6.1. Statistical Inference
6.1.1. Descriptive Statistics vs. Statistical Inference
6.1.2. Parametric Procedures
6.1.3. Non-Parametric Procedures

6.2. Exploratory Analysis
6.2.1. Descriptive Analysis
6.2.2. Visualization
6.2.3. Data Preparation

6.3. Data Preparation
6.3.1. Integration and Data Cleaning
6.3.2. Normalization of Data
6.3.3. Transforming Attributes

6.4. Missing Values
6.4.1. Treatment of Missing Values
6.4.2. Maximum Likelihood Imputation Methods
6.4.3. Missing Value Imputation Using Machine Learning

6.5. Noise in the Data
6.5.1. Noise Classes and Attributes
6.5.2. Noise Filtering
6.5.3. The Effect of Noise

6.6. The Curse of Dimensionality
6.6.1. Oversampling
6.6.2. Undersampling
6.6.3. Multidimensional Data Reduction

6.7. From Continuous to Discrete Attributes
6.7.1. Continuous Data Vs. Discreet Data
6.7.2. Discretization Process

6.8. The Data
6.8.1. Data Selection
6.8.2. Prospects and Selection Criteria
6.8.3. Selection Methods

6.9. Instance Selection
6.9.1. Methods for Instance Selection
6.9.2. Prototype Selection
6.9.3. Advanced Methods for Instance Selection

6.10. Data Pre-Processing in Big Data Environments
6.10.1. Big Data
6.10.2. Classical Versus Massive Pre-processing
6.10.3. Smart Data

Module 7. Predictability and Analysis of Stochastic Phenomena

7.1. Time Series
7.1.1. Time Series
7.1.2. Utility and Applicability
7.1.3. Related Case Studies

7.2. Time Series
7.2.1. Trend Seasonality of ST
7.2.2. Typical Variations
7.2.3. Waste Analysis

7.3. Typology
7.3.1. Stationary
7.3.2. Non-Stationary
7.3.3. Transformations and Settings

7.4. Time Series Schemes
7.4.1. Additive Scheme (Model)
7.4.2. Multiplicative Scheme (Model)
7.4.3. Procedures to Determine the Type of Model

7.5. Basic Forecast Methods
7.5.1. Media
7.5.2. Naive
7.5.3. Seasonal Naive
7.5.4. Method Comparison

7.6. Waste Analysis
7.6.1. Autocorrelation
7.6.2. ACF of Waste
7.6.3. Correlation Test

7.7. Regression in the Context of Time Series
7.7.1. ANOVA
7.7.2. Fundamentals
7.7.3. Practical Applications

7.8. Predictive Methods of Time Series
7.8.1. ARIMA
7.8.2. Exponential Smoothing

7.9. Manipulation and Analysis of Time Series with R
7.9.1. Data Preparation
7.9.2. Identification of Patterns
7.9.3. Model Analysis
7.9.4. Prediction

7.10. Combined Graphical Analysis with R
7.10.1. Normal Situations
7.10.2. Practical Application for the Resolution of Simple Problems
7.10.3. Practical Application for the Resolution of Advanced Problems

Module 8. Design and Development of Intelligent Systems

8.1. Data Pre-Processing
8.1.1. Data Pre-Processing
8.1.2. Data Transformation
8.1.3. Data Mining

8.2. Machine Learning
8.2.1. Supervised and Unsupervised Learning
8.2.2. Reinforcement Learning
8.2.3. Other Learning Paradigms

8.3. Classification Algorithms
8.3.1. Inductive Machine Learning
8.3.2. SVM and KNN
8.3.3. Metrics and Scores for Ranking

8.4. Regression Algorithms
8.4.1. Lineal Regression, Logistical Regression and Non-Lineal Models
8.4.2. Time Series
8.4.3. Metrics and Scores for Regression

8.5. Clustering Algorithms
8.5.1. Hierarchical Clustering Techniques
8.5.2. Partitional Clustering Techniques
8.5.3. Metrics and Scores for Clustering

8.6. Association Rules Techniques
8.6.1. Methods for Rule Extraction
8.6.2. Metrics and Scores for Association Rule Algorithms

8.7. Advanced Classification Techniques. Multiclassifiers
8.7.1. Bagging Algorithms
8.7.2. Random "Forests Sorter"
8.7.3. "Boosting" for Decision Trees

8.8. Probabilistic Graphical Models
8.8.1. Probabilistic Models
8.8.2. Bayesian Networks. Properties, Representation and Parameterization
8.8.3. Other Probabilistic Graphical Models

8.9. Neural Networks
8.9.1. Machine Learning with Artificial Neural Networks
8.9.2. Feedforward Networks

8.10. Deep Learning
8.10.1. Deep Feedforward Networks
8.10.2. Convolutional Neural Networks and Sequence Models
8.10.3. Tools for Implementing Deep Neural Networks

Module 9. Architecture and Systems for Intensive Use of Data

9.1. Non-Functional Requirements. Pillars of Big Data Applications
9.1.1. Reliability
9.1.2. Adaptation
9.1.3. Maintainability

9.2. Data Models
9.2.1. Relational Model
9.2.2. Document Model
9.2.3. Graph Type Data Model

9.3. Databases: Storage Management and Data Recovery
9.3.1. Hash Indexes
9.3.2. Structured Log Storage
9.3.3. Trees B

9.4. Data Coding Formats
9.4.1. Language-Specific Formats
9.4.2. Standardized Formats
9.4.3. Binary Coding Formats
9.4.4. Data Stream Between Processes

9.5. Replication
9.5.1. Objectives of Replication
9.5.2. Replication Models
9.5.3. Problems with Replication

9.6. Distributed Transactions
9.6.1. Transaction
9.6.2. Protocols for Distributed Transactions
9.6.3. Serializable Transactions

9.7. Partitions
9.7.1. Forms of Partitioning
9.7.2. Secondary Index Interaction and Partitioning
9.7.3. Partition Rebalancing

9.8. Offline Data Processing
9.8.1. Batch Processing
9.8.2. Distributed File Systems
9.8.3. MapReduce

9.9. Data Processing in Real Time
9.9.1. Types of Message Broker
9.9.2. Representation of Databases as Data Streams
9.9.3. Data Stream Processing

9.10. Practical Applications in Business
9.10.1. Consistency in Readings
9.10.2. Holistic Focus of Data
9.10.3. Scaling of a Distributed Service

Module 10. Practical Application of Data Science in Business Sectors

10.1. Health Sector
10.1.1. Implications of AI and Data Analysis in the Health Sector
10.1.2. Opportunities and Challenges

10.2. Risks and Trends in the Health Sector
10.2.1. Use in the Health Sector
10.2.2. Potential Risks Related to the Use of AI

10.3. Financial Services
10.3.1. Implications of AI and Data Analysis in Financial Services Sector
10.3.2. Use in the Financial Services
10.3.3. Potential Risks Related to the Use of AI

10.4. Retail
10.4.1. Implications of AI and Data Analysis in the Retail Sector
10.4.2. Use in Retail
10.4.3. Potential Risks Related to the Use of AI

10.5. Industry 4.0
10.5.1. Implications of AI and Data Analysis in Industry 4.0
10.5.2. Use in the 4.0 Industry

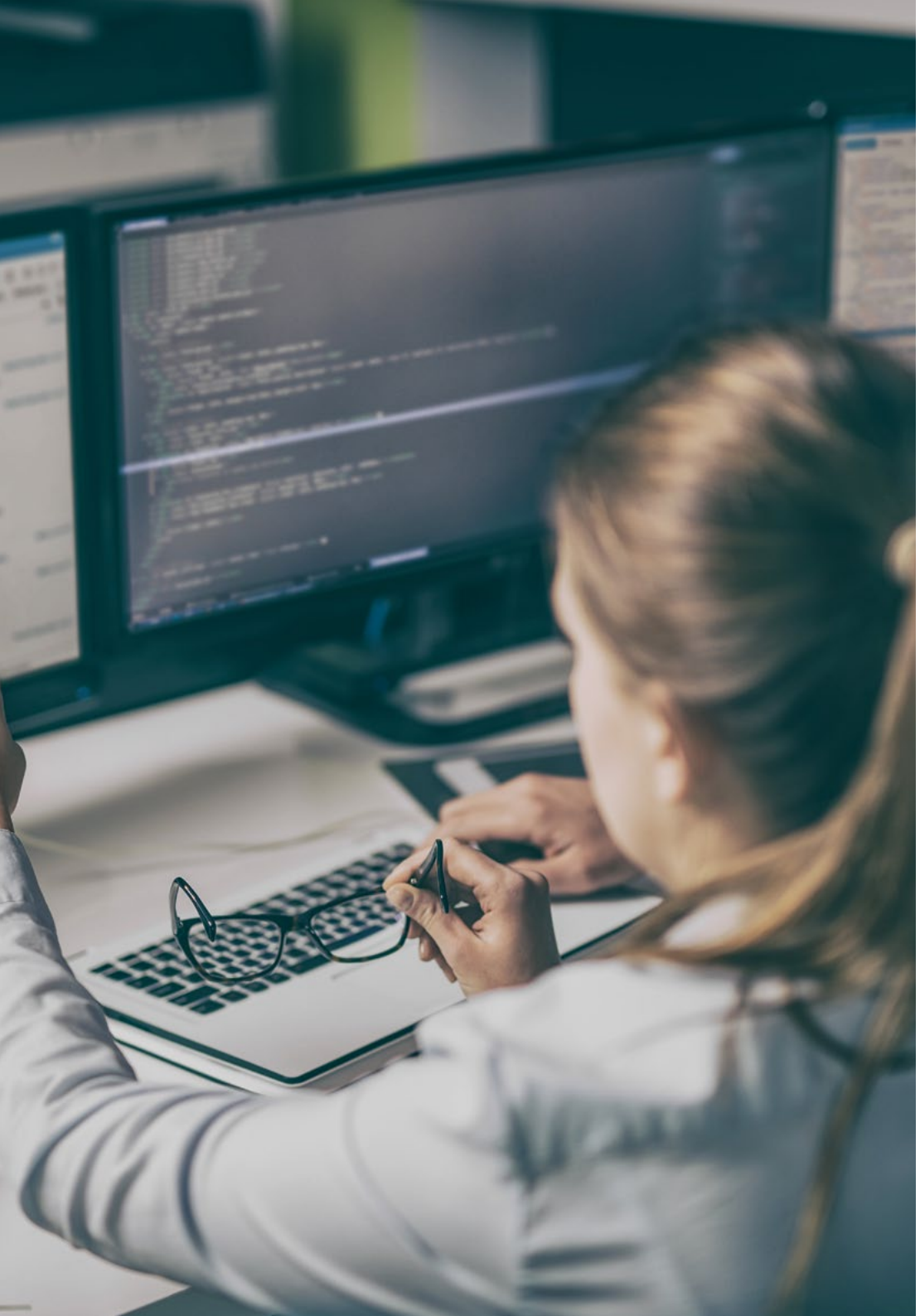
10.6. Risks and Trends in Industry 4.0
10.6.1. Potential Risks Related to the Use of AI

10.7. Public Administration
10.7.1. Implications of AI and Data Analytics for Public Administration
10.7.2. Use in Public Administration
10.7.3. Potential Risks Related to the Use of AI

10.8. Educational
10.8.1. Implications of AI and Data Analysis in Education
10.8.2. Potential Risks Related to the Use of AI

10.9. Forestry and Agriculture
10.9.1. Implications of AI and Data Analysis in Forestry and Agriculture
10.9.2. Use in Forestry and Agriculture
10.9.3. Potential Risks Related to the Use of AI

10.10. Human resources.
10.10.1. Implications of AI and Data Analysis in Human Resources
10.10.2. Practical Applications in the Business World
10.10.3. Potential Risks Related to the Use of AI



It has a unique, key and decisive program to drive the professional development you need to become a leader"

07

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.

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.

Relearning Methodology

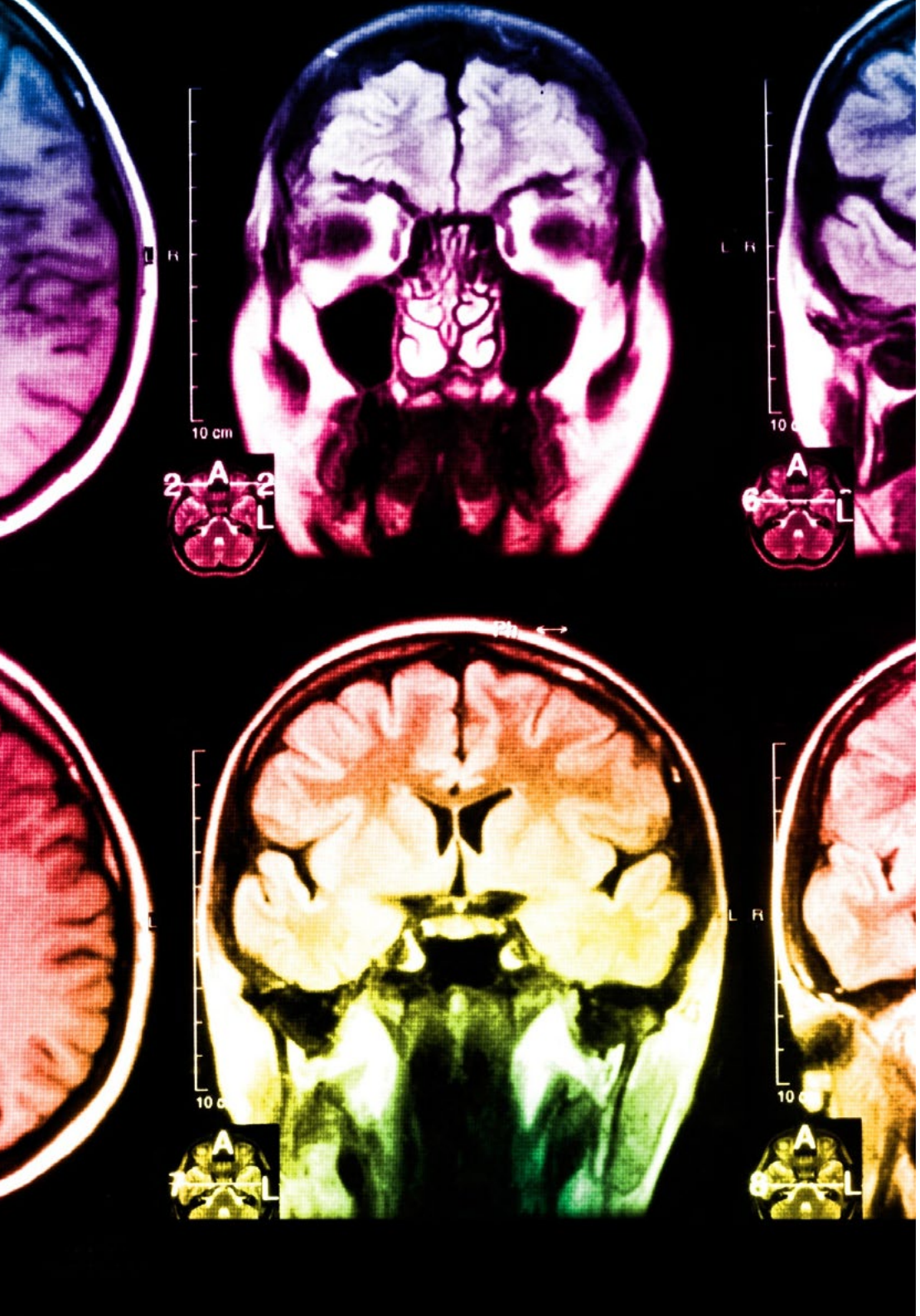
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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.



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.

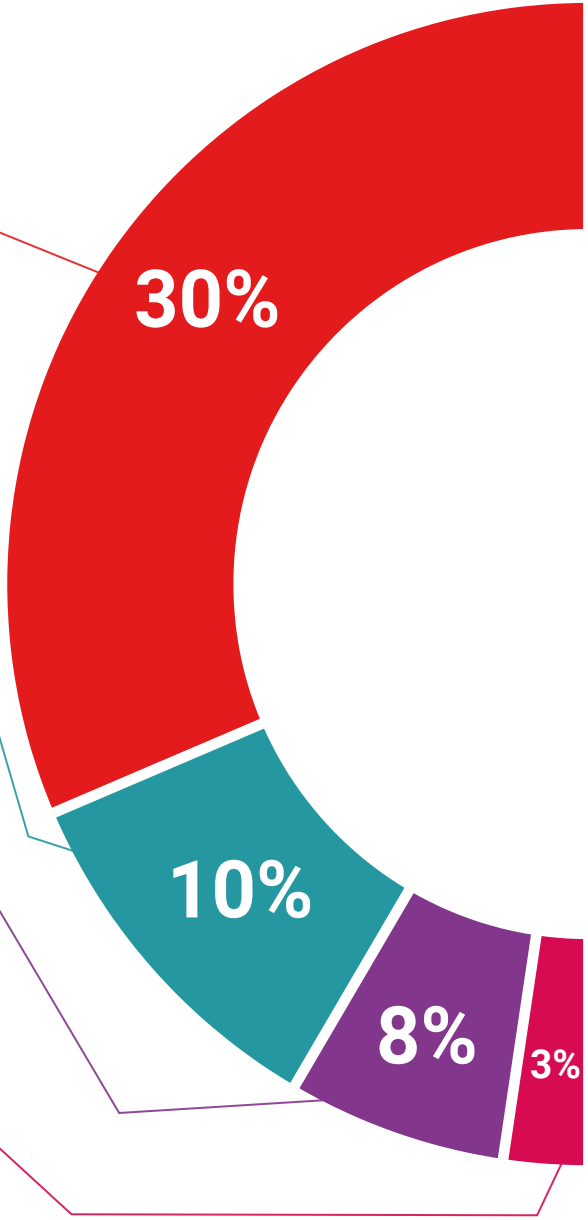
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

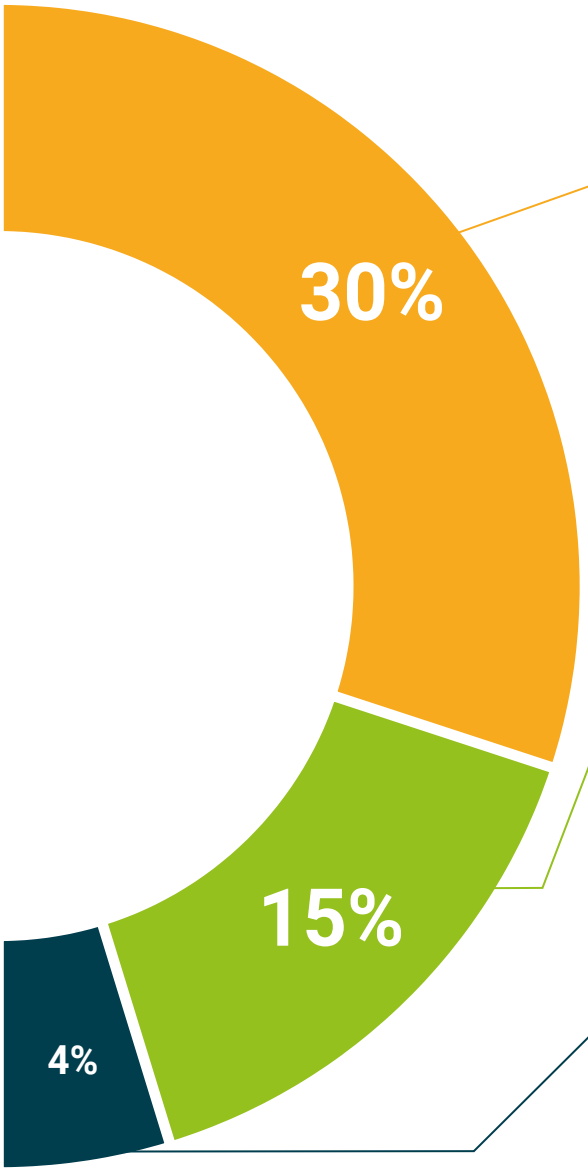
Management Skills Exercises

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.





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.

08

Our Students’ Profiles

The program is aimed at University Graduates and Postgraduates who have previously completed any of the following degrees in the field of computer engineering, systems engineering, software engineering, or any branch related to these fields of study.

This program uses a multidisciplinary approach as the students have a diverse set of academic profiles and represent multiple nationalities.

Professionals with a university degree in any field and two years of work experience in the field of Data Science administration may also take the Executive Master's Degree.

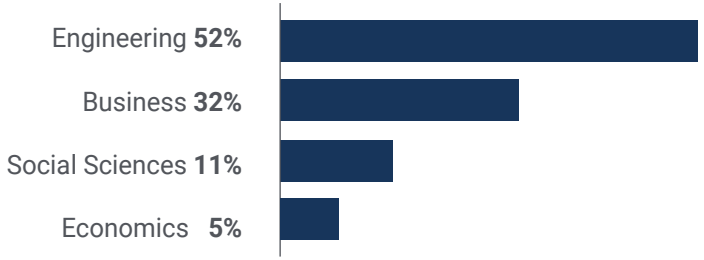
If you are looking to improve and enhance your professional profile towards the management of an IT department, this program is the one for you"

Average Age

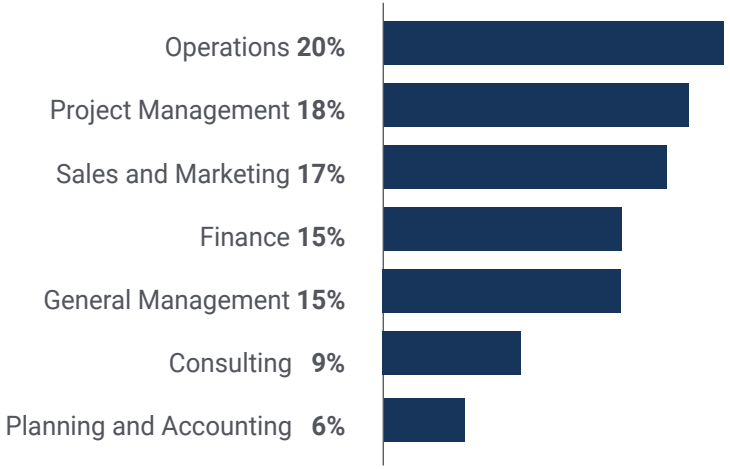
Between **35** and **45** years old

Years of Experience

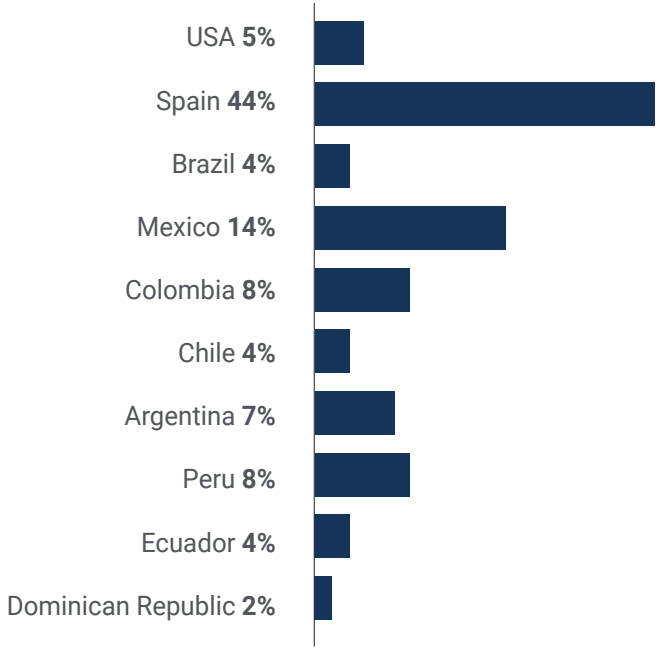
Training



Academic Profile



Geographical Distribution



Samuel García

Data Science Officer

"Thanks to this program, I have achieved what I had been pursuing for so many years: to become a manager in the field of data analysis. An achievement that without TECH's educational model and facilities would have been impossible"

09

Course Management

At TECH we have a specialized teaching staff to ensure a quality education in line with current market demands. Therefore, for the Executive Master's Degree in Data Science Management and the Data Science Officer we have gathered a group of highly qualified professionals with extensive experience in the field. That is why computer engineers interested in this field can be sure to receive current and specific knowledge of this booming international field.

Become an elite professional with the theoretical and practical knowledge of a group of highly qualified experts"

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 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

Mr. Armero Fernández, Rafael

- Business Intelligence Consultant en SDG Group
- Digital Engineer en Mi-GSO
- Logistic Engineer in Torrecid S.A.
- Quality Intern at INDRA
- Degree in Aerospace Engineering from the Polytechnic University of Valencia
- Master's Degree in Professional Development 4.0 from the University of Alcalá de Henares

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
- Developer, Team Lead, Scrum Master, Agile Coach, Product Manager in DocPath
- Higher Engineering in Computer Science by the ESI of Ciudad Real (UCLM)
- Postgraduate in Project Management from CEOE - Confederación Española de Organizaciones Empresariales (Spanish Confederation of Business Organisations)
- 50+ MOOCs taken, taught by renowned universities such as Stanford University, Michigan University, Yonsei University, Polytechnic University of Madrid, etc.

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 Specialist Course in Computer Science
- Master's Degree in Data Science and Computer Engineering from the University of Granada

Ms. Fernández Meléndez, Galina

- Data Analyst in ADN Mobile Solution
- ETL processes, data mining, data analysis and visualization, establishment of KPI's, Dashboard design and implementation, management control. 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 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

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)

Mr. Fondón Alcalde, Rubén

- Customer Value Management Business Analyst at Vodafone Spain
- Head of Service Integration at Entelgy for Telefónica Global Solutions
- Online account manager for clone servers at EDM Electronics
- Business Analyst for Southern Europe at Vodafone Global Enterprise
- Telecommunications Engineer from the European University of Madrid
- Master's Degree in Big Data and Data Science from the International University of Valencia

Mr. Díaz Díaz-Chirón, Tobias

- 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
- Freelance mainly dedicated to the telecommunications sector, specialising in 4G/5G networks
- OpenStack: deploy and administration
- Degree in Computer Engineering from the University of Castilla-La Mancha, specialising in computer architecture and networks
- Associate Professor at the University of Castilla-La Mancha in the subjects of distributed systems, computer networks and concurrent programming
- Lecturer in Sepecam course on network administration

This teaching staff will teach you the latest developments in this discipline so that you will become a highly sought after professional in this sector"

10

Impact on Your Career

This program involves a great economic, professional and, of course, personal investment, of which TECH is aware.

The ultimate goal of carrying out this great effort should be to achieve professional growth in the students' field of interest.

This is your opportunity to generate a positive change in your professional career. Discover a new horizon with this Executive Master's Degree"

If you want to make a positive change in your profession, the Executive Master's Degree in Data Science Management and the Data Science Officer will help you achieve it.

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

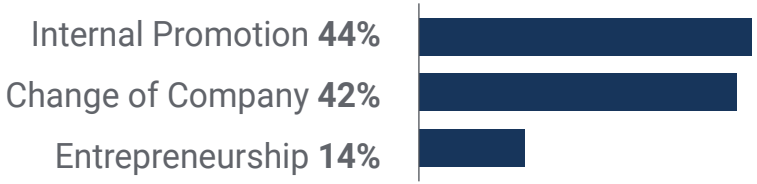
The Executive Master's Degree in Data Science Management and the Data Science Officer of TECH is an intensive program that prepares students to face challenges and business decisions in the field of data analysis. The main objective is to promote personal and professional growth. Helping students achieve 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.

When the change occurs

Type of change



Salary increase

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

11

Benefits for Your Company

The Executive Master's Degree in Data Science Management and the Data Science Officer contributes to elevate the organization's talent to its maximum potential by preparing high level leaders.

Participating in this program is a unique opportunity to access a powerful network of contacts in which to find future professional partners, customers or suppliers.

In the era of data, the head of a technology department will bring to the company new concepts, strategies and perspectives that can bring about essential changes in the organization"

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 executive 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 Organisation will come into contact with the main markets in the world economy.

05

Project Development

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

06

Increased competitiveness

This Executive Master's Degree will equip students with the skills to take on new challenges and drive the organization forward.

12

Certificate

The Executive Master's Degree in Data Science Management and the Data Science Officer guarantees students, in addition to the most rigorous and up to date education, access to a Executive Master's Degree issued by TECH Technological University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

This **Executive Master's Degree in Data Science Management and the Data Science Officer** contains most complete and up to date program on the market.

After the student has passed the assessments, they will receive their corresponding **Executive Master's Degree** certificate issued by **TECH Technological University** via tracked delivery*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Executive Master's Degree, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Executive Master's Degree in Data Science Management and the Data Science Officer**

Official Nº of hours: **1,500 h.**


tech technological university

Awards the following

CERTIFICATE

to

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

For having successfully passed and accredited the following program

EXECUTIVE MASTER'S DEGREE

in

Data Science Management and the Data Science Officer

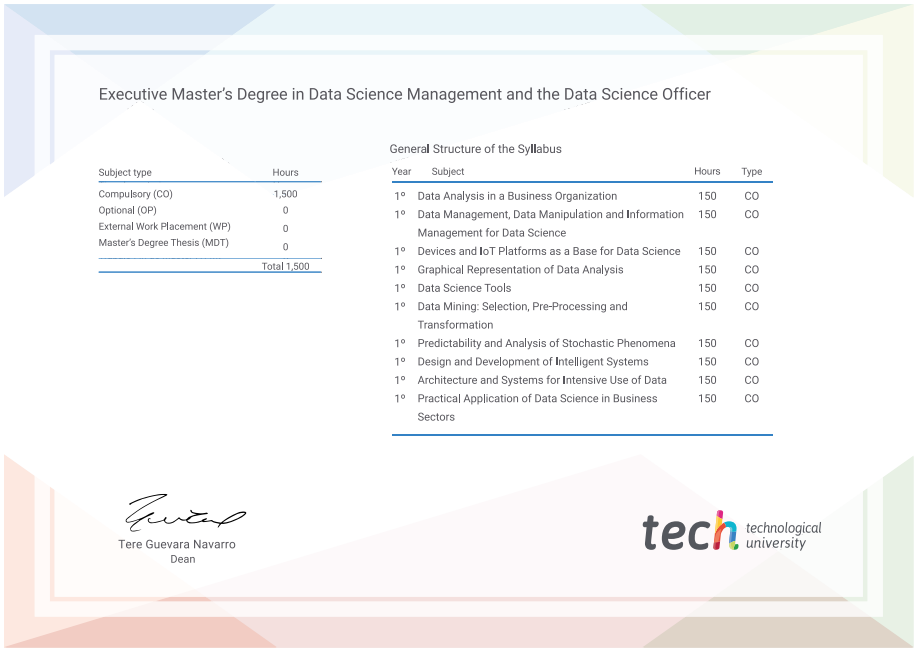
This is a qualification awarded by this University, equivalent to 1,500 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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


Executive Master's Degree in Data Science Management and the Data Science Officer

Subject type	Hours
Compulsory (CO)	1,500
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 1,500

General Structure of the Syllabus

Year	Subject	Hours	Type
1º	Data Analysis in a Business Organization	150	CO
1º	Data Management, Data Manipulation and Information Management for Data Science	150	CO
1º	Devices and IoT Platforms as a Base for Data Science	150	CO
1º	Graphical Representation of Data Analysis	150	CO
1º	Data Science Tools	150	CO
1º	Data Mining: Selection, Pre-Processing and Transformation	150	CO
1º	Predictability and Analysis of Stochastic Phenomena	150	CO
1º	Design and Development of Intelligent Systems	150	CO
1º	Architecture and Systems for Intensive Use of Data	150	CO
1º	Practical Application of Data Science in Business Sectors	150	CO

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Dean

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*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.

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Executive Master's Degree

Data Science Management and the Data Science Officer

Language: **English**

Course Modality: **Online**

Duration: **12 months.**

Certificate: **TECH Technological University**

Official Nº of hours: **1,500 h.**

Executive Master's Degree

Data Science Management and the Data Science Officer

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