# Hybrid Professional Master's Degree
## Data Science Management
## (DSO, Data Science Officer)

**tech** technological university

![tech technological university]

# Hybrid Professional Master's Degree
## Data Science Management
## (DSO, Data Science Officer)

Modality: **Hybrid (Online + Internship)**

Duration: **12 months**

Certificate: **TECH Technological University**

Teaching Hours: **1,620 h.**

Website: **www.techtitute.com/pk/information-technology/hybrid-professional-master-degree/hybrid-professional-master-degree-data-science-management-dso-data-science-officer**

# Index

# 01
# Introduction

*Analyze the advantages of AI in the current technological paradigm, thanks to an online program that is complemented with a practical experience in an expert company in Marketing"*

This **Hybrid Professional Master's Degree in Data Science Management (DSO, Data Science Officer)** contains the most complete and up-to-date program on the market. The most important features include:

- Development of more than 100 computer cases presented by professional experts in data analysis and interpretation and university professors with extensive experience in the digital sector

- 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

- Development of on-site analytical skills to make quality decisions

- Testing of best practices for data management according to data types and uses

- Analysis of data management tools using programming languages

- Selection of the most appropriate tools and general methods for modeling each Dataset according to the preprocessing carried out

- Development and implementation of the algorithms used for data preprocessing

- All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments

- Contents available from any fixed or portable device with internet connection

- In addition, you will be able to do an internship in one of the best advertising agencies

*Enroll now in a Hybrid Professional Master's Degree that will provide you with the keys to understanding statistical interference as opposed to descriptive statistics and its benefits in the real-world setting"*

*Expand your skills in massive data preprocessing and understand how the study of Big Data has evolved, compared to conventional data analysis methods.*

*Inquire into the basic properties of univariate time series models, thanks to a hands-on period that will broaden your skills in data analysis and AI.*

## 02
# Why Study this Hybrid Professional Master's Degree?

Students who access this Hybrid Professional Master's Degree will achieve a comprehensive mastery of classical and advanced modeling procedures through the course of a program designed exclusively for them to achieve it in just 12 months. This is a program through which graduates will be able to broaden their knowledge in an exhaustive manner with academic material of the highest quality. In addition, they will be able to fix them, a posteriori, through an unparalleled internship in which they will work side by side with the best professionals in the IT field.

*The best program to become an expert in predictive and profitability models through the mastery of data processing, Machine Learning and process optimization"*

## 1. Updating from the Latest Technology Available

Graduates who choose this Hybrid Professional Master's Degree course will have access to the most innovative and specialized technological resources, both for the academic-theoretical section, as well as during the practical period. In this way, they will not only have access to a dynamic and enjoyable training, but will also be able to implement in their practice the most sophisticated and avant-garde computer equipment in the sector.

## 2. Gaining In-depth Knowledge from the Experience of Top Specialists

Students will be supported at all times by a team specialized in the area of Data Science Management, both in the theoretical section, as well as during the internship. TECH places special emphasis on this issue in order to ensure compliance with the purposes for which the Hybrid Professional Master's Degree was designed.

## 3. Entering first-class environments

The selection of centers for this program is done exhaustively, always thinking about the welfare of the student through the best companies for internships. In this way TECH guarantees access to an internship of the highest quality, where the graduate will be able to project their career towards the elite through active work in the areas corresponding to their specialty, in this case Machine Learning, process optimization, data processing, etc.

### 4. Combining the Best Theory with State-of-the-Art Practice

The launch of an experience that combines the most advanced and innovative theory with the possibility of an internship in a prestigious clinical center is just another example of TECH's great commitment to professional progress. For this reason, its offer related to this type of program is becoming more and more extensive, increasing the possibilities of accessing experiences adapted to the needs of different professions.

### 5. Expanding the Boundaries of Knowledge

TECH has a wide range of agreements with companies all over the world, thanks to which it is possible to offer international internships. In this way, it erases borders, providing graduates with the possibility of moving to different parts of the globe to update their practice according to the strategies and trends that are being used in those territories.

*You will have full practical immersion at the center of your choice"*

03
# Objectives

"

*With this theoretical-practical program you will identify all the existing models of probabilistic reasoning, so that you will become a much more competitive professional in the market"*

## General Objective

♦ This program aims to expand and update the knowledge of graduates in Computer Science and Marketing, among other disciplines, so that they can delve into the benefits of the application of data analytics techniques in different business departments. In addition, by taking this program, they will delve into the use of software tools for graphing and exploratory data analysis. All this, so that the specialist will be able to propose in the workplace, techniques and objectives to maximize the productivity of companies

*A program designed for specialists like you, who are looking to update their technical knowledge so as not to be left behind in conventional computing"*

## Specific Objectives

**Module 1. Data Analysis in a Business Organization**
- Develop analytical skills in order to make quality decisions
- Examine effective marketing and communication campaigns
- Determine the creation of scorecards and kpi's according to the department
- Generate specialized knowledge to develop predictive analytics
- Propose business and loyalty plans based on market research
- Develop the ability to listen to the customer
- Apply statistical, quantitative and technical knowledge in real situations

**Module 2. Data and Information Management and Manipulation in Data Science**
- Perform data analyses
- Unify diverse data: Achieving consistency of information
- Producing relevant, effective information for decision making
- Determine the best practices for data management according to its typology and uses
- Establish data access and reuse policies
- Ensure security and availability: information availability, integrity and confidentiality
- Examine data management tools using programming languages

## Module 3. IoT Devices and Platforms as the Basis for Data Science

- Identify what is IoT (Internet of Things) and IIoT (Industrial Internet of Things)
- Review the Industrial Internet Consortium
- Analyze what is the IoT reference architecture
- Address IoT sensors and devices and their classification
- Identify communications protocols and technologies used in IoT
- Examine the different Cloud platforms in IoT: General Purpose, Industrial, Open Source
- Develop data exchange mechanisms
- Establish security requirements and strategies
- Present the different IoT and IIoT application fields

## Module 4. Graphical Representation of Data Analysis

- Generate specialized knowledge in data analysis and representation
- Examine the different types of grouped data
- Establish the most-used graphic representations in different fields
- Determine the design principles in data visualization
- Introduce graphic narrative as a tool
- Analyze the different software tools for graphing and exploratory data analysis

## Module 5. Data Science Tools

- Develop the skills to convert data into information from which knowledge can be extracted
- Determine the main features of a dataset, its structure, components and the implications of its distribution in the modeling
- Supporting decision making by performing comprehensive data analysis in advance
- Develop skills to solve practical cases using data science techniques
- Establish the most appropriate general tools and methods for modeling each Dataset based on the preprocessing performed
- Assess the results in an analytical way, understanding the impact of the chosen strategy on the various metrics
- Demonstrate critical analysis of the results obtained after applying preprocessing or modeling methods

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

- Generate specialized knowledge about the statistical prerequisites for any data analysis and evaluation
- Develop the necessary skills for data identification, preparation and transformation
- Asses the various methodologies presented and identify advantages and drawbacks
- Examine the problems in high dimensional data environments
- Implement algorithms used for data preprocessing
- Demonstrate the ability to interpret data visualization for descriptive analysis
- Develop advanced knowledge of the different existing data preparation techniques for data cleaning, normalization and transformation

## Module 7. Predictability and Analysis of Stochastic Phenomena

- Analyze time series
- Develop the formulation and basic properties of univariate time series models
- Examine the methodology for modeling and prediction of real time series
- Assess univariate models including outliers
- Apply dynamic regression models and apply the methodology for the construction of such models from observed series
- Address the spectral analysis of univariate time series, as well as the fundamentals related to periodogram-based inference and interpretation
- Estimate the probability and trend in time series for a given time horizon

## Module 8. Design and Development of Intelligent Systems

- Analyze the step from information to knowledge
- Develop the different types of machine learning
- Examine metrics and scores to quantify model quality
- Implement the different machine learning algorithms
- Identify probabilistic reasoning models
- Lay the foundations for deep learning
- Demonstrate the skills acquired to understand the various machine learning algorithms

## Module 9. Architecture and Systems for Intensive Use of Data

- Determine the requirements for mass data usage systems
- Examine different data models and analyze databases
- Analyze the key functionalities for distributed systems and their importance in different types of systems
- Assess which widely used applications use the fundamentals of distributed systems to design their systems
- Analyze the way in which databases store and retrieve information
- Understand the different replication models and associated issues
- Develop partitioning and distributed transactions
- Assess batch systems and (near) real time systems

## Module 10. Practical Application of Data Science in Sectors of business activity

- Analyze the state of the art of Artificial Intelligence (AI) and data analytics
- Develop specialized knowledge of the most widely used technologies
- Generate a better understanding of the technology through use cases
- Analyze the chosen strategies to select the best technologies to implement
- Determine the fields of application
- Examine the actual and potential risks of the technology used
- Propose benefits derived from the use
- Identify future trends in specific fields

04
# Skills

*"Enroll in this program so that you will be able to develop the implementation of algorithms used for data preprocessing and improve your IT services"*

## General Skills

- Develop a technical and business perspective of data analysis
- Understand the most current algorithms, platforms and tools for data exploration, visualization, manipulation, processing, and analysis
- Implementing a business vision necessary for valorization as a key element for decision making
- Be able to address problems specific to data analysis

*You will master data processing and manipulation through the knowledge and exhaustive handling of specific languages and libraries that you will acquire with this Hybrid Professional Master's Degree"*
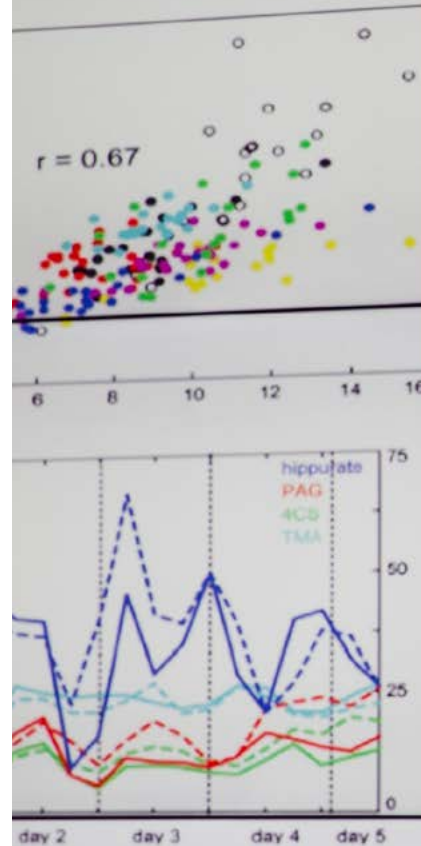
## Specific Skills

- Specialize in Data Science from a technical and business perspective
- Visualize data in the most appropriate way to favor data sharing and understanding for different profiles
- Address the key functional areas of the organization where data science can deliver the most value
- Develop the data life cycle, its typology and the technologies and phases necessary for its management
- Develop advanced knowledge in fundamental data mining techniques for data selection, preprocessing and transformation
- Specialize in the main Machine Learning algorithms for the extraction of hidden knowledge in data
- Generate specialized knowledge in the software architectures and systems required for intensive data use
- Determine how the IoT can be a source of data generation and key information on which to apply data science for knowledge extraction
- Analyze the different ways of applying data science in different industries or verticals by learning real-world examples

05
# Course Management

*Do not hesitate any longer, choose a program that has the guidance and academic support of experts in Big Data for you to master all the tools of this discipline"*

## Management

### Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO at Korporate Technologies
- CTO at AI Shepherds GmbH
- Consultant and Strategic Business Advisor at Alliance Medical
- Director of Design and Development at DocPath
- Doctorate in Psychology from the University of CastillaLa
- PhD in Economics, Business and Finance from the Camilo José Cela University
- PhD in Psychology from University of Castilla – La Mancha
- Master's Degree in Executive MBA from the University Isabel I
- Master's Degree in Sales and Marketing Management, I
- Master's Degree in Big Data by Hadoop Formation
- Master's Degree in Advanced Information Technologies from the University of Castilla - la Mancha
- Member of the Multidisciplinary Research Group SMILE

## Professors

**Mr. Peris Morillo, Luis Javier**

- Capitole Consulting Technical Lead for Inditex
- Senior Technical Lead y Delivery Lead Support en HCL
- Technical Editor at Baeldung
- Agile Coach y director de Operaciones en Mirai Advisory
- Developer, Team Lead, Scrum Master, Agile Coach y Product
- Manager at DocPath
- ARCO Technologist
- Graduate in Computer Engineering from the University of Castilla-La Mancha
- Postgraduate in Project Management by the CEOE

**Dr. Montoro Montarroso, Andrés**

- Researcher in the SMILe Group at the University of Castilla-La Mancha
- Researcher at the University of Granada
- Data Scientist at Prometeus Global Solutions
- Vice President and Software Developer at CireBits
- PhD in Advanced Information Technology from the University of Castilla-La Mancha, Spain
- 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 Prevention of Corruption in Public Administration and Artificial Intelligence of the Faculty of Law and Social Sciences of Toledo, giving the lecture: 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 "Análisis de Sentimientos para la prevención de mensajes de odio en las redes sociales"

**Ms. Fernández Meléndez, Galina**

- Big Data Specialist
- Data Analyst at Aresi Gestión de Fincas
- Data Analyst in ADN Mobile Solution
- Bachelor's Degree in Business Administration at Universidad Bicentenaria Aragua.. Caracas, Venezuela
- Postgraduate Certificate in Planning and Public Finance from the Venezuelan School of Planning
- Master's Degree in Data Analysis and Business Intelligence from the University of Oviedo
- MBA in Business Administration and Management (Escuela De Negocios Europea De
- Master's Degree in Big Data and Business Intelligence from the European Business School of Barcelona

## Ms. Pedrajas Perabá, María Elena
- New Technologies and Digital Transformation Consultant at Management Solutions
- Researcher in the Department of Computer Science and Numerical Analysis at the University of Cordoba
- Researcher at the Singular Center for Research in Intelligent Technologies in Santiago de Compostela
- Degree in Computer Engineering from the University of Cordoba
- Master's Degree in Data Science and Computer Engineering from the University of Granada
- Master's Degree in Advertising and Communication at the Pontificia Comillas University

## Ms. Martínez Cerrato, Yésica
- Business Analytics and Information Systems Management Expert
- Product Manager in Electronic Security in Securitas Direct
- Project Manager of the Large Accounts Integration Area at Correos
- Business Intelligence Analyst at Ricopia Technologies
- Teacher in university and post-university studies
- Graduate in Telecommunications Engineering at Universidad de Alcalá

## Mr. Tato Sánchez, Rafael
- Technical Director at Indra Sistemas SA
- Systems Engineer at ENA TRÁFICO SAU
- Master's Degree in Industry 4.0. from the Universidad en Internet
- Master's Degree in Industrial Engineering from Universidad Europea
- Degree in Industrial Electronics and Automation Engineering from the Universidad Europea
- Technical Industrial Engineer from the Universidad Politécnica de Madrid
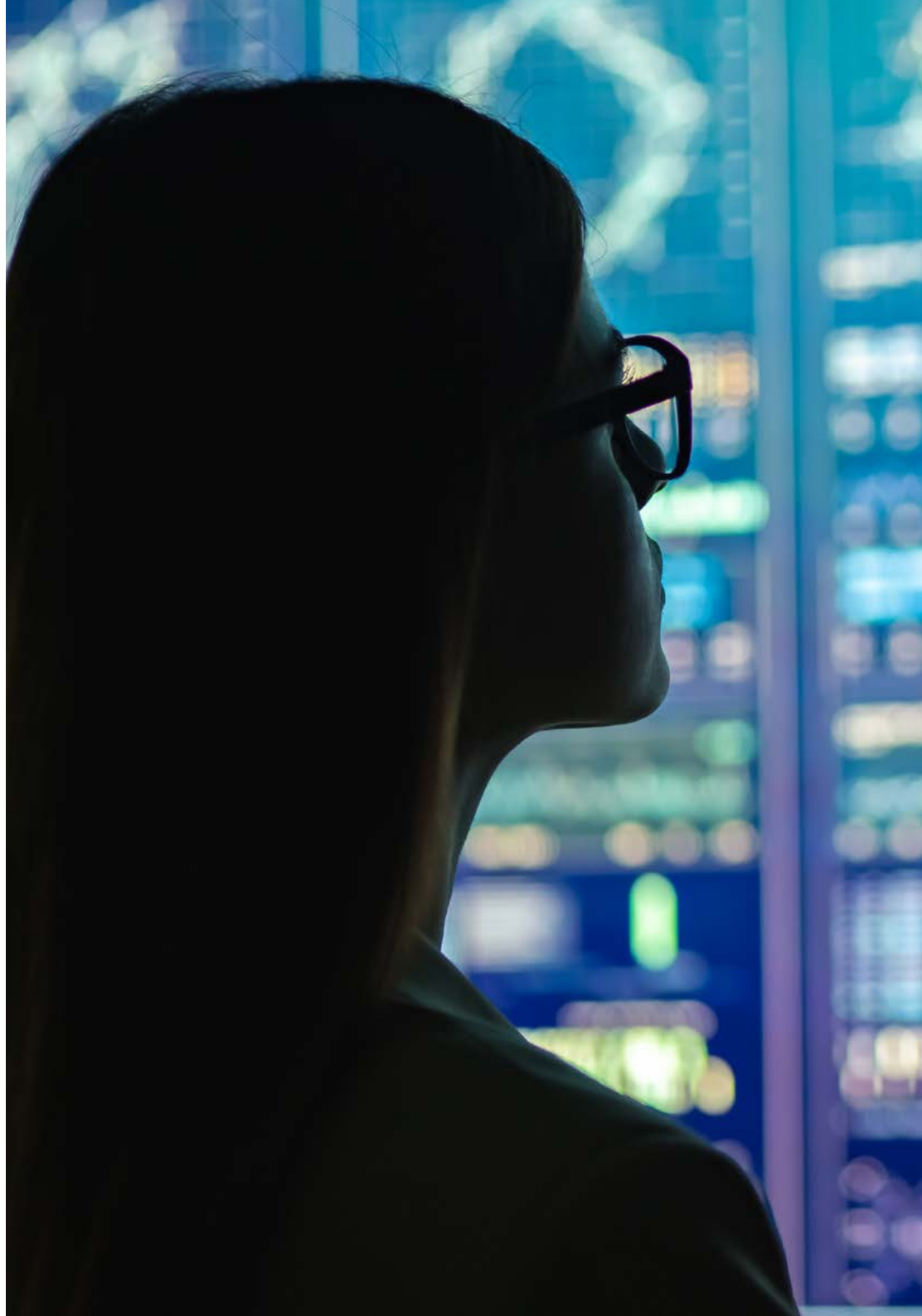
## Ms. Rissanen, Karoliina

- EMEA Talent Acquisition Specialist at Hexagon Manufacturing Intelligence
- Human Resources Specialist at Oy Sinebrychoff Ab, Carlsberg Group
- Deputy Head of People, Performance and Development at IATA Global Delivery Center
- Customer Service Manager at IATA Global Delivery Center
- Degree in Tourism from the University Haaga-Helia
- Degree in Human Resources and Labor Relations, UNIR
- Master's Degree in Protocol and External Relations from Camilo José Cela University
- Postgraduate Certificate in Human Resources Management by the Chartered Institute of Personnel and Development
- Instructor by the International Air Transport Association

## 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

# Educational Plan

*Optimize representation design for data analysis and understand how visualization tools can increase your outreach"*

## 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. Departmental Scorecards and KPIs
- 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 for Measurement, 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 and Information Management and Manipulation in 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. IoT Devices and Platforms as the Basis 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.    Division of the 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 Vs. Discrete

    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

**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 Sectors of business activity

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 Analytics in the Financial Services Industry

    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

*Haven't you mastered the practical applications of Big Data yet? Witness its application in various business sectors, such as advertising"*

07

# Internship

*Analyze strategies, forecasting and campaign management effectively through data management to make more confident career decisions"*

*Do you know the structure of Big Data? Master the architecture and its influences on the effectiveness of data processing thanks to TECH"*

| Module | Practical Activity |
|---|---|
| **Managing IoT devices and platforms as a basis for data science** | Manage IoT sensors and devices |
| | Work with OSI model protocols |
| | Work with Cloud platforms for IoT and IIoT |
| | Delve into data management models using open data |
| | Implementing IIoT security strategies |
| | Develop IoRT protocols (Internet of Robotics Things) |
| **Use of data science tools** | Carry out data analysis in different contexts |
| | Learn in detail the types of analysis through practice |
| | Use the extraction of information from a Dataset |
| | Approach the Dataset from its base to its exhaustive handling |
| | Implement the balancing in the Dataset |
| **Design and development of intelligent systems and data-intensive systems and architectures** | Work in data processing and transformation |
| | Use classification algorithms |
| | Implement the main strategies of linear regression, logistic regression and nonlinear models |
| | Implement bagging algorithms |
| | Work in relational, document and network models |
| | Use databases for data storage and retrieval management |
| | Learn data coding formats in detail |
| **Practical Application of Data Science in Sectors of business activity** | Practical application of data science in various business sectors |
| | Approach to the various phases and elements of data analytics |
| | Development of data analytics applied to a department within the enterprise |
| | Approach to different cases through strategies, prediction and campaign management |
| | Mastering time series |
| | Learn in detail about time series schemes |
| | Apply basic forecast methods |
| | Understand residuals analysis |

## Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this entity commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship program at the center.

# General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

**1. TUTOR:** During the Hybrid Professional Master's Degree, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

**2. DURATION:** The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

**3. ABSENCE:** If the students does not show up on the start date of the Hybrid Professional Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

**4. CERTIFICATION:** Professionals who pass the Hybrid Professional Master's Degree will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** The Hybrid Professional Master's Degree shall not constitute an employment relationship of any kind.

**6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Hybrid Professional Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

**7. DOES NOT INCLUDE:** The Hybrid Professional Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

# Where Can I Do the Internship?

*Enter the world of Data Science Management with a program that will teach you not only in a theoretical way, but also in a practical way in a prestigious company"*

The student will be able to complete the practical part of this Hybrid Professional Master's Degree at the following centers:

**Information Technology**

### EPA Digital

| Country | City |
|---------|------|
| Mexico | Mexico City |

Address: Avenida Ejército Nacional 418 piso 9 Polanco V Sección CDMX C.P 11520

Digital Marketing and Communication Agency

**Related internship programs:**
- Visual Analytics and Big Data
- MBA in Digital Marketing

**Information Technology**
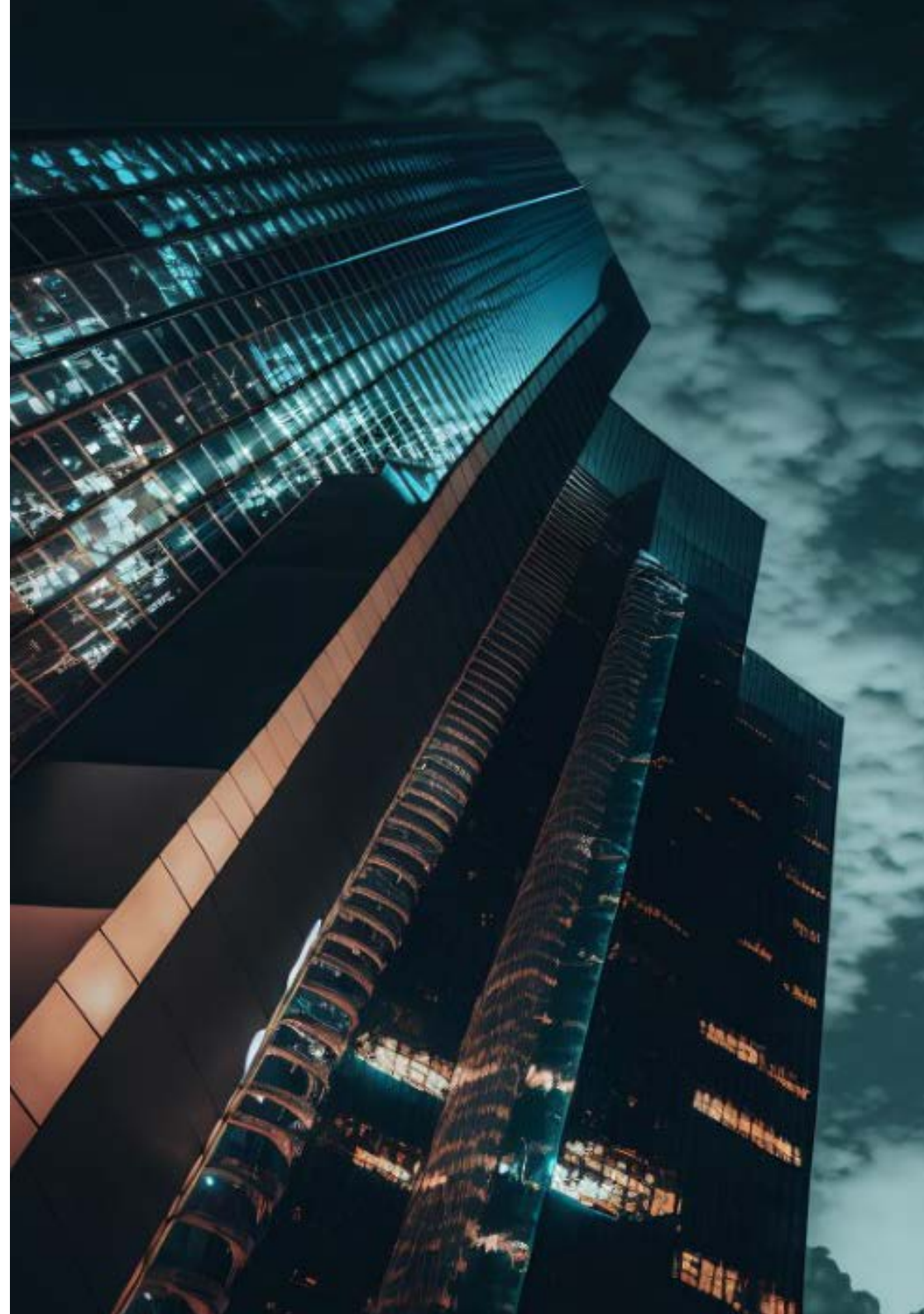
### Grupo Fórmula

Country
Mexico

City
Mexico City

Address: Cda. San Isidro 44, Reforma Soc,
Miguel Hidalgo, 11650 Ciudad de México, CDMX

Leading company in multimedia communication and
content generation

Related internship programs:
Graphic Design
People Management

# 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"*

## 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"*



*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.

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. 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 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.

### Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject 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.

**30%**

**10%**

**8%**

**20%**

**25%**

**4%**

**3%**
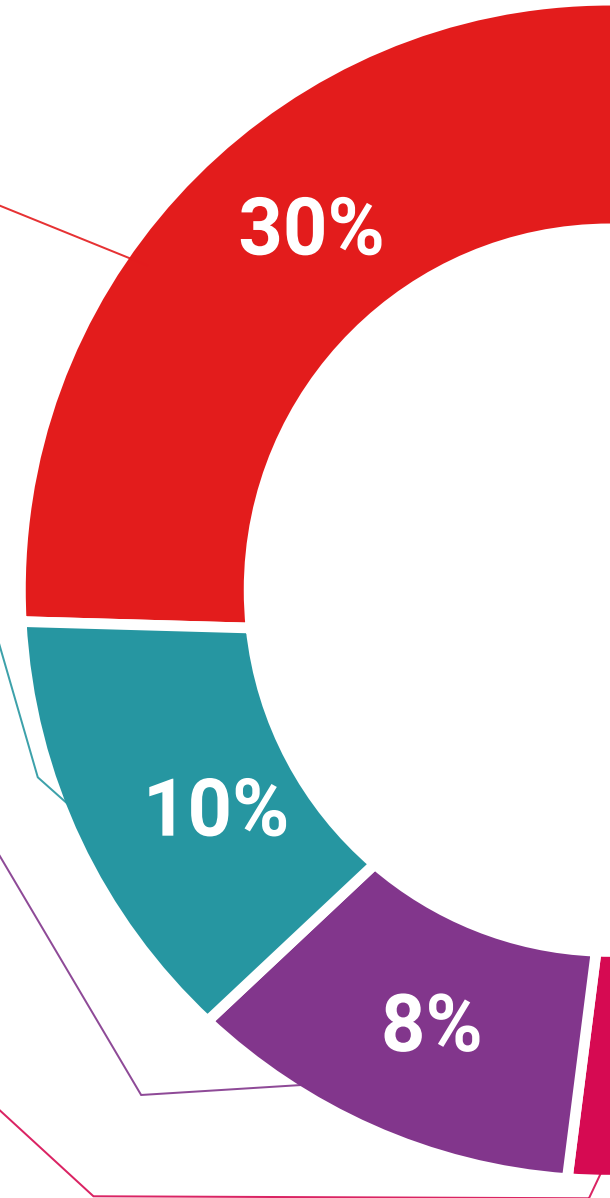
### Case Studies

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.

# Certificate

The Hybrid Professional Master's Degree in Data Science Management (DSO, Data Science Officer) guarantees, in addition to the most rigorous and up-to-date education, access to a Hybrid Professional Master's Degree issued by TECH Technological University.

" *Successfully complete this program and receive your university certification without traveling or complex paperwork"*

This **Hybrid Professional Master's Degree in Data Science Management (DSO, Data Science Officer)** contains the most complete and up-to-date program on the professional and educational field.

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

In addition to the certificate, students will be able to obtain an academic transcript, as well as a certificate outlining the contents of the program. In order to do so, students should contact their academic advisor, who will provide them with all the necessary information.
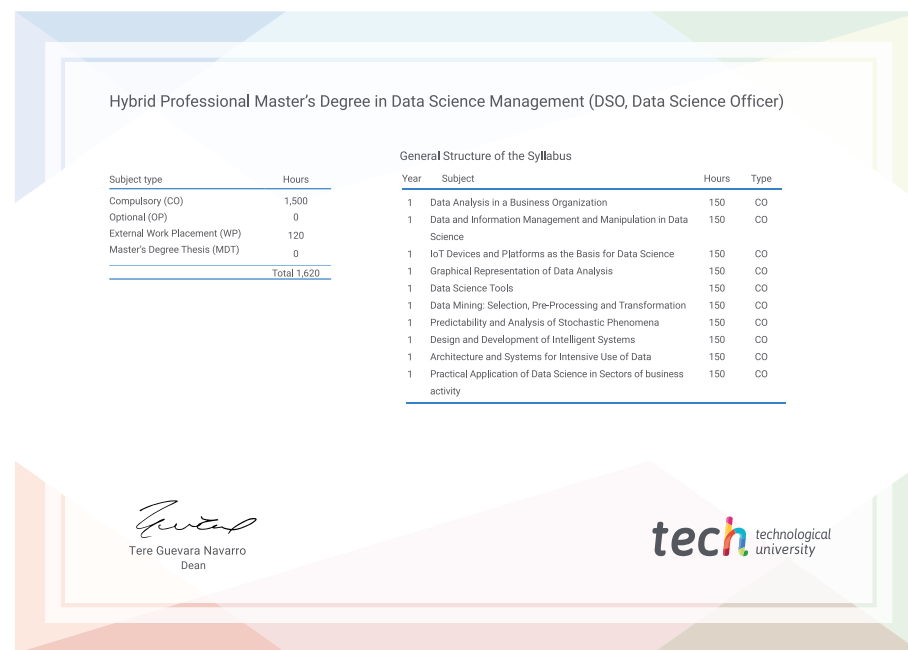
Title: **Hybrid Professional Master's Degree in Data Science Management (DSO, Data Science Officer)**

Course Modality: **Hybrid (Online + Clinical Internship)**

Duration: **12 months**

Certificate: **TECH Technological University**

Teaching Hours: **1,620 h.**

---

tech technological university

Awards the following
## CERTIFICATE
to

Mr./Ms. _____ with identification number _____.
For having successfully passed and accredited the following program

**HYBRID PROFESSIONAL MASTER'S DEGREE**
in
Data Science Management (DSO, Data Science Officer)

This is a qualification awarded by this University, with a duration of 1,620 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

---

Hybrid Professional Master's Degree in Data Science Management (DSO, Data Science Officer)

| Subject type | Hours |
|---|---|
| Compulsory (CO) | 1,500 |
| Optional (OP) | 0 |
| External Work Placement (WP) | 120 |
| Master's Degree Thesis (MDT) | 0 |
| Total | 1,620 |

General Structure of the Syllabus

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

Tere Guevara Navarro
Dean

tech technological university

---

*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.

# Hybrid Professional Master's Degree

## Data Science Management (DSO, Data Science Officer)

Modality: **Hybrid (Online + Internship)**
Duration: **12 months**
Certificate: **TECH Technological University**
Teaching Hours: **1,620 h.**

# Hybrid Professional Master's Degree
## Data Science Management
## (DSO, Data Science Officer)

**tech** technological university