

## TECHNICAL SHEET OF THE SUBJECT

Data of the subject	
Subject name	Datos e Información
Subject code	E000011586
Involved programs	Máster Universitario en Administración de Empresas (MBA) [Primer Curso]
Level	Postgrado Oficial Master
Quarter	Semestral
Credits	3,0 ECTS
Type	Optativa
Department	Departamento de Métodos Cuantitativos
Coordinator	Alejandro Pérez Calvo
Schedule	N/A
Office hours	Upon request
Course overview	Becoming data-centered is the critical technology strategy of many businesses worldwide. It is not a coincidence that the most valuable companies in the last few years are dominantly technology companies that use data as "a mine of business knowledge". In this module you will develop skills oriented towards collecting, storing, organizing, and retrieving data in a corporate environment. This module is not intended for students to become data engineers, but to understand the importance of data for business in the 2020s and get familiar with the top data technologies used by companies such as American Express, Netflix, Accuweather or Marriott Hotels.

Teacher Information	
Teacher	
Name	Alejandro Pérez Calvo
Department	ICADE Business School
E-Mail	apcalvo@icade.comillas.edu

## SPECIFIC DATA OF THE SUBJECT

Contextualization of the subject
<p><b>Contribution to the professional profile of the degree</b></p> <p>We live in a world increasingly dominated by data. Data are used to make important decisions, to shape business and political policy, and to understand the fundamental workings of nature.</p> <p>Data is the currency of now and potential to use it the right way, at the right time for the right reason gives you possibility beyond imagination.</p> <p>In the last 2 years, 90% of the world's data has been created and businesses are spending more than \$180 billion a year on big data analysis. Many people are building high-salary careers working with data.</p> <p>The best way to actually understand data is to see how it works in real life. We'll walk through a series of helpful and practical examples of</p>



how some of the world's largest brands made data a part of their core business.

### Course objectives

- Develop skills oriented towards collecting, storing, organizing, and retrieving data
- Create information and data models at conceptual, logical, and physical level
- Use a variety of data extraction tools with confidence
- Understand what to consider when setting your data structures and architecture
- Analyze data to make better business decisions and improve corporate capabilities
- Learn techniques and tools for loading data and get an overview of data visualization

### Prerequisites

- No programming skills required
- Tools and resources to be provided for this module

### Competencies - Objectives

#### Competences

#### GENERALES

<b>CG01</b>	Capacidades cognitivas de análisis y síntesis aplicadas a situaciones de negocios y problemáticas organizativas de gestión.	
	<b>RA01</b>	Describe, relaciona e interpreta situaciones y planteamiento de nivel medio.
	<b>RA02</b>	Selecciona los elementos más significativos y sus relaciones en las situaciones planteadas.
	<b>RA03</b>	Identifica las carencias de información y establece relaciones con elementos externos a la situación planteada.
	<b>RA04</b>	Es capaz de resumir y estructurar la información empleando los conceptos adecuados.
<b>CG02</b>	Gestión de la información y de datos como elementos clave para la toma de decisiones y la identificación, formulación y resolución de problemas empresariales.	
	<b>RA01</b>	.Busca, conoce, sintetiza y utiliza adecuadamente datos primarios y secundarios procedentes de diversas fuentes.
	<b>RA02</b>	Conoce y usa Internet para buscar y manejar información, textos y datos.
	<b>RA03</b>	Discierne el valor y la utilidad de diferentes fuentes y tipos de información.
<b>CG03</b>	Resolución de problemas y toma de decisiones en los niveles estratégico, táctico y operativo de una organización empresarial, teniendo en cuenta la interrelación entre las diferentes áreas funcionales y de negocio.	
	<b>RA01</b>	Identifica y define adecuadamente el problema y sus posibles causas.
	<b>RA02</b>	Plantea posibles soluciones pertinentes y diseña un plan de acción para su aplicación.



	<b>RA03</b>	Identifica problemas antes de que su efecto se haga evidente.
	<b>RA04</b>	Dispone de la capacidad para tomar decisiones de una forma autónoma.
	<b>RA05</b>	Reconoce y busca alternativas a las dificultades de decisión en situaciones reales.
	<b>RA06</b>	.Es capaz de ponderar diferentes factores (económicos, sociales y técnicos, entre otros) en el proceso de toma de decisiones y determinar su impacto.
<b>CG09</b>	Capacidad de aprendizaje autónomo para seguir formándose para aprender a aprender las habilidades cognitivas y los conocimientos relevantes aplicados a la actividad profesional y empresarial.	
	<b>RA01</b>	Realiza sus trabajos y su actividad necesitando sólo unas indicaciones iniciales y un seguimiento básico.
	<b>RA02</b>	Busca y encuentra recursos adecuados para sostener sus actuaciones y realizar sus trabajos.
	<b>RA03</b>	Amplía y profundiza en la realización de sus trabajos.
<b>ESPECÍFICAS</b>		
<b>CE09</b>	Ser capaz de analizar problemas de la empresa y su entorno mediante el conocimiento de los datos y de la información; su naturaleza, recolección, almacenaje, modelización y extracción y mediante el uso de métodos cuantitativos, distinguir técnicas de análisis y de modelización apropiadas y aplicar las mismas a casos prácticos de predicción y simulación en la gestión empresarial.	
	<b>RA01</b>	Aplica la abstracción y la simplificación para modelar en términos matemáticos el problema al que se enfrenta.
	<b>RA02</b>	Conoce los instrumentos matemáticos necesarios para la modelización.
	<b>RA03</b>	Integra el análisis gráfico, verbal y los datos cuantitativos y cualitativos al estudio de cuestiones decisionales relacionadas con el problema.
	<b>RA04</b>	Es capaz de interpretar los resultados obtenidos y usarlos para tomar decisiones de manera razonada.

## THEMATIC BLOCKS AND CONTENTS

### Contents - Thematic Blocks

#### 1. DATA AND INFORMATION IN THE DIGITAL ERA

The module familiarizes the student with techniques to finding, storing, processing, and disseminating data and information.

- We'll describe various instances of digital use to see how industries and corporates can work with data to produce information



## 2. INTRODUCTION TO BIG DATA & BIG DATA OPPORTUNITIES

This module will inspire you to explore opportunities in the world of information and big data and take you from the basics to the advance information technology, which could be used for the big data analytics projects

- You will understand how Big Data is helping us become proactive based on examples from corporates such as American Express, Netflix, Accuweather or Marriott Hotels

## 3. MODERN DATA WAREHOUSE & DATA ARCHITECTURE CONCEPTS

Learn the fundamentals of Data architecture and the Modern Data Warehouse and what strategies can be used to move from a traditional Data Warehouse in combination of Big Data Technologies, Data Lakes and Data Visualization

- The module includes the key concepts to understand the different types of databases, assign relationships, relate tables with IDs and design rules

## 4. INFORMATION AND DATA MODELING

We'll cover how data modeling offers added value for organizations, based on numerous backgrounds including databases, data warehousing, big data and data management

- Learn some modeling techniques examples: UML class and object modeling, Entity Relationship, Data Flows, Snowflake

## 5. ACCESING DATA SOURCES AND DATABASES

Learn data extraction tools and techniques to get information from websites & other sources into useable, useful format

- We'll walk through a series of helpful and practical data extraction tools and techniques such as extracting tabular and non-tabular data from webpages, automating data retrieval, using web APIs or SQL simple code for manipulating and retrieving data in databases

## 6. THE DATA PIPELINE: ACQUISITION AND PROCESSING OF DATA

How we can create a simple data pipeline, including data input, data cleansing, and data visualization

- Practices the various tools and methods that can be used for data engineering, particularly on data ingestion from various sources

## 7. DATA VISUALIZATION & STORYTELLING

Present data in a way that people will understand and remember. Tell a story with the data and go visual!

- This module is structured to provide all key aspects of Data visualization in the most simple and clear fashion so you can start the journey in the Data visualization world

## TEACHING METHODOLOGY



### In-class Methodology: Activities

- Teaching lectures to introduce the basics of each topic
- Development of a model example by the teacher
- Guided practice of cases applying the concepts learnt
- Oral presentation of the applied practical cases done in group

CG01, CG02, CG03,  
CG09, CE09

### Non-Presential Methodology: Activities

- Tutored personal work
- Individual and group practice work

CG01, CG02, CG03,  
CG09, CE09

## SUMMARY STUDENT WORKING HOURS

CLASSROOM HOURS		
Análisis y resolución de casos y ejercicios, individuales o colectivos	Presentaciones orales de temas, casos, ejercicios y trabajos	Lecciones de carácter expositivo
20.00	10.00	20.00
NON-PRESENTIAL HOURS		
Análisis y resolución de casos y ejercicios, individuales o colectivos	Aprendizaje colaborativo	
20.00	10.00	
<b>ECTS CREDITS: 3,0 (80,00 hours)</b>		

## EVALUATION AND CRITERIA

Evaluation activities	Evaluation criteria	Weight
Attendance & Active participation in class	0 - 10	20 %
Public oral presentation	0 - 10	20 %
Cases & Exercises	0 - 10	50 %
Self & Group assessment	0 - 10	10 %

## Ratings

To pass the subject, the student should obtain at least the following:

- Attendance Requirements: 80%
- Cases and Exercises: 5/10

- Oral presentation: 5/10

Total grade weighting all components equal or superior to 5/10

Those students that do not pass the subject will be able to submit the cases and exercises and repeat the oral presentation

Students with an attendance waiver

In order to pass the module, these students will have to submit the cases and exercises and repeat the oral presentation. Total grade weighting all components equal or superior to 5/10

## **BIBLIOGRAPHY AND RESOURCES**

### **Basic Bibliography**

Data Stewardship: An Actionable Guide to Effective Data Management and Data Governance. DAVID PLOTKIN. Academic Press; 2nd edition (20 Nov. 2020). ISBN-10 : 0128221321

The Data Model Toolkit: Simple Skills To Model The Real World. DAVE KNIFTON. Paragon Publishing; Illustrated edition (10 Oct. 2016). ISBN-10 : 1782224734