



TECHNICAL SHEET OF THE SUBJECT

Data of the subject	
Subject name	Data and Information
Subject code	E000011586
Main program	Official Master's Degree in Business Administration - MBA
Involved programs	Máster Universitario en Administración de Empresas (MBA) [First year]
Level	Postgrado Oficial Master
Quarter	Semestral
Credits	3,0 ECTS
Type	Optativa
Department	Departamento de Métodos Cuantitativos
Coordinator	TBC
Schedule	Multiple dates. Check 24-25 calendar
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

SPECIFIC DATA OF THE SUBJECT

Contextualization of the subject

Contribution to the professional profile of the degree

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.

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.

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.

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 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

CG01	Analytic and synthesis cognitive capacities applied to business situations and managing and organisation problems.	
	RA01	Describe, relaciona e interpreta situaciones y planteamiento de nivel medio.
	RA02	Selecciona los elementos más significativos y sus relaciones en las situaciones planteadas.
	RA03	Identifica las carencias de información y establece relaciones con elementos externos a la situación planteada.
	RA04	Es capaz de resumir y estructurar la información empleando los conceptos adecuados.
CG02	Management of data and information as key elements for decision-making and for identification, formulation and resolution of business problems.	
	RA01	.Busca, conoce, sintetiza y utiliza adecuadamente datos primarios y secundarios procedentes de diversas fuentes.
	RA02	Conoce y usa Internet para buscar y manejar información, textos y datos.
	RA03	Discierne el valor y la utilidad de diferentes fuentes y tipos de información.
CG03	Problem-solving and decision-making skills at a strategic, tactic and operational level with regard to a business, considering the interrelationship between the different functional and business areas.	
	RA01	Identifica y define adecuadamente el problema y sus posibles causas.
	RA02	Plantea posibles soluciones pertinentes y diseña un plan de acción para su aplicación.
	RA03	Identifica problemas antes de que su efecto se haga evidente.
	RA04	Dispone de la capacidad para tomar decisiones de una forma autónoma.
	RA05	Reconoce y busca alternativas a las dificultades de decisión en situaciones reales.



	RA06	.Es capaz de ponderar diferentes factores (económicos, sociales y técnicos, entre otros) en el proceso de toma de decisiones y determinar su impacto.
CG09	Knowledge, understanding and handling of tools for diagnosis of the competitive position of a company, and designing and executing the company's strategic plan.	
	RA01	Realiza sus trabajos y su actividad necesitando sólo unas indicaciones iniciales y un seguimiento básico.
	RA02	Busca y encuentra recursos adecuados para sostener sus actuaciones y realizar sus trabajos.
	RA03	Amplía y profundiza en la realización de sus trabajos.
ESPECÍFICAS		
CE09	Being able to analyse the problems of the company and its environment through the understanding of data and information – their nature, collection, storage, modelling and extraction – and through the use of quantitative methods, and to identify appropriate analysis and modelling techniques and apply these same techniques to predictive and simulation case studies of business management.	
	RA01	Aplica la abstracción y la simplificación para modelar en términos matemáticos el problema al que se enfrenta.
	RA02	Conoce los instrumentos matemáticos necesarios para la modelización.
	RA03	Integra el análisis gráfico, verbal y los datos cuantitativos y cualitativos al estudio de cuestiones decisionales relacionadas con el problema.
	RA04	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: INTRODUCTION TO BIG DATA AND OPPORTUNITIES

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

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

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

2. 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 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 table with IDs and design rules
- Learn how Amazon AWS, Microsoft Azure or Google Cloud work

3. 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: Entity Relationship, Data Flows, etc.

4. ACCESSING 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 data from webpages, automating data retrieval, using SQL simple code for manipulating and retrieving data in databases

5. 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

TEACHING METHODOLOGY

General methodological aspects of the subject

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

Analysis and resolution of cases and exercises, individually or collectively

Oral presentations of topics, cases, exercises and papers

Lessons of an expository nature



20.00	10.00	15.00
NON-PRESENTIAL HOURS		
Analysis and resolution of cases and exercises, individually or collectively	Collaborative learning	
20.00	10.00	
ECTS CREDITS: 3,0 (75,00 hours)		

EVALUATION AND CRITERIA

Evaluation activities	Evaluation criteria	Weight
Attendance & Active participation in class	Min. score 5 out of 10	20
Public oral presentation	Min. score 5 out of 10	20
Cases & Exercises	Min. score 5 out of 10	50
Self & Group assessment	Min. score 5 out of 10	10

Ratings

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

- Attendance Requirements: 80%
- Participation in class: 5/10
- 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

Note: It is not permitted to use AI technology, such as ChatGPT or similar software to complete assignments. Rules apply to all cases and exercises.

BIBLIOGRAPHY AND RESOURCES

Basic Bibliography



COMILLAS

UNIVERSIDAD PONTIFICIA

ICAI

ICADE

CIHS

Syllabus
2024 - 2025

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 Science Design Manual. STEVEN S. SKIENA. Springer (29 Aug. 2017). ISBN-10: 9783319554433

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

Complementary Bibliography

Online resources:

<https://www.datasciencecentral.com/>