



COMILLAS

UNIVERSIDAD PONTIFICIA

ICAI

ICADE

CIHS

Syllabus
2020 - 2021

TECHNICAL SHEET OF THE SUBJECT

Data of the subject	
Subject name	Data Analysis for Decision Making
Subject code	E000004360
Mainprogram	Official Master's Degree in Business Administration - MBA
Involved programs	Máster Universitario en Administración de Empresas (MBA) [Primer Curso]
Credits	3,0 ECTS
Type	Obligatoria

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SPECIFIC DATA OF THE SUBJECT

Contextualization of the subject

Contribution to the professional profile of the degree

The course in the professional context

The effective management of organizations requires knowledge of the contributions that quantitative and analytical methods can have when it comes to providing rationality to decision-making processes. In the context of this subject a series of analytical tools and techniques commonly used in the field of management and business are presented.

Course objectives

- Provide students with the ability to analyze information and data as key elements for decision-making and the identification, formulation and resolution of business problems.
- Learn to do a basic descriptive treatment of a set of data, know how to extract conclusions from the same regarding the behavior of certain variables and be able to model simple economic phenomena.
- Provide students with the ability to analyze problems of the company and its environment using quantitative methods, distinguish appropriate analysis and modeling techniques and apply them to practical cases of prediction and simulation in business management.
- Provide students with a framework for understanding core data-related responsibilities such as:
 - Measurement: Determining the impact of business efforts and marketing campaigns.
 - Optimization: Recommending changes in tactics or spending to improve results.
 - Experiments: Designing and executing tests to isolate causes.
 - Segmentation: Identifying groups and subgroups of customers and prospects.
 - Predictive modeling: Building models to improve performance rates.
 - Storytelling: Communicating messages derived from data to inspire better decisions
- Understand the importance of digital transformation and business technologies applied to data analysis

Prerequisites

Those students without prior training in data analysis should take 2 credits of additional training in the field, in order to homogenize starting levels



Competencias - Objectives

Competences

GENERALES

CG01	Capacidades cognitivas de análisis y síntesis aplicadas a situaciones de negocios y problemáticas organizativas de gestión	
	RA1	Describe, relaciona e interpreta situaciones y planteamiento de nivel medio
	RA2	Selecciona los elementos más significativos y sus relaciones en las situaciones planteadas
	RA3	Identifica las carencias de información y establece relaciones con elementos externos a la situación planteada
	RA4	Es capaz de resumir y estructurar la información empleando los conceptos adecuados
CG02	Gestión de la información y de datos como elementos clave para la toma de decisiones y la identificación, formulación y resolución de problemas empresariales	
	RA1	Busca, conoce, sintetiza y utiliza adecuadamente datos primarios y secundarios procedentes de diversas fuentes
	RA2	Conoce y usa Internet para buscar y manejar información, textos y datos
	RA3	Discierne el valor y la utilidad de diferentes fuentes y tipos de información
CG03	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	
	RA1	Identifica y define adecuadamente el problema y sus posibles causas
	RA2	Plantea posibles soluciones pertinentes y diseña un plan de acción para su aplicación
	RA3	Identifica problemas antes de que su efecto se haga evidente
	RA4	Dispone de la capacidad para tomar decisiones de una forma autónoma
	RA5	Reconoce y busca alternativas a las dificultades de decisión en situaciones reales
	RA6	Es capaz de ponderar diferentes factores (económicos, sociales y técnicos, entre



		otros) en el proceso de toma de decisiones y determinar su impacto
CG09		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
	RA1	Realiza sus trabajos y su actividad necesitando sólo unas indicaciones iniciales y un seguimiento básico
	RA2	Busca y encuentra recursos adecuados para sostener sus actuaciones y realizar sus trabajos
	RA3	Amplía y profundiza en la realización de sus trabajos
ESPECÍFICAS		
CE09		Ser capaz de analizar problemas de la empresa y su entorno 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
	RA1	Aplica la abstracción y la simplificación para modelar en términos matemáticos el problema al que se enfrenta
	RA2	Conoce los instrumentos matemáticos necesarios para la modelización
	RA3	Integra el análisis gráfico, verbal y los datos cuantitativos y cualitativos al estudio de cuestiones decisionales relacionadas con el problema
	RA4	Es capaz de interpretar los resultados obtenidos y usarlos para tomar decisiones de manera razonada

THEMATIC BLOCKS AND CONTENTS

Contents - Thematic Blocks

MODULE 1: Business Data analysis

MODULE 2: The Analytics Lifecycle

MODULE 3: Basic Descriptive Data Analysis

MODULE 4: Risks of Data Analytics

MODULE 5: Analytical Methods: from time series to social media analysis

MODULE 6: Grouping the similar: Clustering

MODULE 7: Data Visualization and Technology



TEACHING METHODOLOGY

General methodological aspects of the subject	
In-class Methodology: Activities	
Short teaching lectures to introduce the basics of each topic <ul style="list-style-type: none"> • 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 • Presentations by top industry professionals (guest speakers) 	CG01, CG02, CG03, CG09, CE09
Non-Presential Methodology: Activities	
Tutored personal work <ul style="list-style-type: none"> • Individual and group practice work • On-line assessment test after finishing each topic 	CG01, CG02, CG03, CG09, CE09

SUMMARY STUDENT WORKING HOURS

CLASSROOM HOURS		
Lecciones de carácter expositivo	Análisis y resolución de casos y ejercicios, individuales o colectivos	
10.00	20.00	
NON-PRESENTIAL HOURS		
Estudio individual y lectura organizada	Análisis y resolución de casos y ejercicios, individuales o colectivos	Aprendizaje colaborativo
10.00	25.00	10.00
ECTS CREDITS: 3,0 (75,00 hours)		

EVALUATION AND CRITERIA

Evaluation activities	Evaluation criteria	Weight
Final exam	Knowledge of the subject To pass the subject, the student should obtain at least the following: <ul style="list-style-type: none"> • Attendance: 50% • Final exam: 5/10 	45 %



Public oral presentation group project	Quality of the presentation and of the content	15 %
Quizzes, kahoots, questions...	Active participation, score in quizzes	15 %
Cases assessment at the end of each topic	Knowledge of the subject	25 %

Ratings

To pass the subject, the student should obtain at least the following: • Attendance: 50% • Final exam: 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 retake the final exam and repeat the oral presentation of the group practical application.

Students with an attendance waiver

In order to pass the course, these students will have to take the final exam (100% of grading), but it is highly recommended to do some of the other online activities in order to modulate and improve final grade.

BIBLIOGRAPHY AND RESOURCES

Basic Bibliography

Class notes

Handouts & slides

Books

- Quantitative methods for decision makers MIK WISNIEWSKY Ed. Prentice Hall 2010 – ISBN 978-027-37-1207-7

Complementary Bibliography

Big Data: Using Smart Big Data, Analytics and Metrics to Make Better Decisions and Improve Performance
BERNARD B. MARR Ed. John Wiley & Sons 2015 – ISBN 978-111-89-6583-2

Data Science for Business: What you need to know about data mining and data-analytic thinking
FOSTER PROVOST Ed. O'Reilly Media 2013 – ISBN 978-144-93-6132-7

Data Science & Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data
EMC EDUCATION SERVICES Wiley. ISBN: 9781118876138



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