SUBJECT TEACHING GUIDE

M1518 - Intelligent Data Analysis and Decision-Taking

Master's Degree in Mathematics and Computing

Academic year 2020-2021

1. IDENTIFYING DATA					
Degree	Master's Degree in Mathematics and Computing			Type and Year	Optional. Year 1
Faculty	Faculty of Sciences				
Discipline					
Course unit title and code	M1518 - Intelligent Data Analysis and Decision-Taking				
Number of ECTS credits allocated	3	Term		Semester based (1)	
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICA APLICADA Y CIENCIAS DE LA COMPUTACION
Name of lecturer	ANGEL COBO ORTEGA
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Other lecturers	MARIA PATRICIA GOMEZ GARCIA

3.1 LEARNING OUTCOMES
- Knowledge of the basic principles of "Business Analytics"
- Access to sources of structured and unstructured information that can facilitate decision-making processes
- Use of operations research techniques in decision-making
- Identify problems which can be dealt with multicriteria decision techniques

4. OBJECTIVES

The course aims to introduce the concept of business analytics and to show how intelligent analysis of data combined with appropriate strategies of operations research can help in the process of decision making in organizations. The potential use of open data to improve business processes is analyzed. The course discuss the main difficulties of classic optimization techniques to move to present multicriteria decision methodologies and software tools to improve decision-making processes.

6. COURSE ORGANIZATION

CONTENTS	
1	Basic concepts of business analytics and decision-making in the organizations
2	Data, information and knowledge as key elements of decision making
3	Needs of organizations in current decision contexts
4	Intelligent data analysis: data mining and Swarm Intelligence
5	Operations research and decision making: concepts and tools.
6	Multicriteria decision strategies
7	Multicriteria linear programming
8	Discrete multicriteria techniques: Analytic Hierarchy Process (AHP) and TOPSIS method

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Work of practical application	Work	No	Yes	30,00
Analysis of practical cases in the computer room	Laboratory evaluation	No	Yes	70,00
TOTAL				100,00

Observations

There is a single annual evaluation period. If the subject is not passed in the ordinary evaluation activities carried out in the first or the second quarters, an extraordinary evaluation will be available.

Observations for part-time students

Part-time students can be assessed with a work of practical application (50%) and a list of simple exercises proposed by the teacher (50%)

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Bouman, R., Dongen, J. (2009). Pentaho solutions: business intelligence and data warehousing with Pentaho and MySQL. Ed Wiley.

Hardoon, D.R., Shmueli, G. (2013). Getting started with business analytics : insightful decision-making. CRC Press.

Romero, C. (1993). Teoría de la decisión multicriterio : conceptos, técnicas y aplicaciones. Madrid : Alianza, D.L. 1993.