

SUBJECT TEACHING GUIDE

M1707 - Storage Technologies of non-related data

Master's Degree in computing engineering

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Master's Degree in computing engineering			Type and Year	Optional. Year 2
Faculty	Faculty of Sciences				
Discipline	Optional Subjects				
Course unit title and code	M1707 - Storage Technologies of non-related data				
Number of ECTS credits allocated	3	Term	Semester based (1)		
Web	https://moodle.unican.es/				
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. INGENIERÍA INFORMÁTICA Y ELECTRÓNICA				
Name of lecturer	ALFONSO DE LA VEGA RUIZ				
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Office	Facultad de Ciencias. Planta: + 1. DESPACHO PROFESORES (1073)				
Other lecturers	DIEGO GARCIA SAIZ				

3.1 LEARNING OUTCOMES

- Learn and apply concepts, technologies and tools for the design and implementation of data bases oriented to the management of huge quantities of data (big data)

4. OBJECTIVES

Learning the different data management paradigms under the term NoSQL , its advantages and differences with respect to the object-relational model.

Learn the principles of database design of these new data models.

Analyse and evaluate the technology that best suits to the needs of a problem of massive data volumes (big data)

Implement and query NoSQL databases.

Know existing cloud platforms for the storage and management of massive data volumes.

6. COURSE ORGANIZATION

CONTENTS

1	Data management: historical review. NoSQL: background, characteristics and differences with respect to relational management. Taxonomy of solutions. NewSQL vs NoSQL.
2	NoSQL Paradigms: Key-value, Column-store, documental and graph data bases. Architecture and data models. Query languages. Design principles. Case studies.
3	Technologies and tools for ingestion , query, analysis and visualisation of masive quantities of data. Cloud computing services for the management and analysis of data.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Classroom participation, topic discussion, oral presentations about techniques and tools	Activity evaluation with Virtual Media	No	Yes	50,00
Project: The student will carry out one of the following types of work: a) a database design under the NoSQL paradigm, b) a data management and analysis process (pipeline) using big data technologies; c) a deployment of a NoSQL database on the cloud.	Work	No	Yes	50,00
TOTAL				100,00

Observations

There is only one exam period. Student must get a qualification higher than the minimum established in each assessable activity. The final qualification will be computed as the weighted-sum of all assessable activities.

Observations for part-time students

Part-time students will be assessed according to:

- Written exam: 50%
- Project: 50%

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Eric Redmond. Seven Databases in Seven Weeks: A Guide to Modern Databases and the NoSQL Movement. 2012 (free book)

Nathan Marz, James Warren. Big Data: Principles and best practices of scalable realtime data systems 1st Edition. 2015. Manning publisher

