SUBJECT TEACHING GUIDE

330 - Storage Technologies of non-related data

Master's Degree in computing engineering

Academic year 2023-2024

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	330 - 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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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 are two calls: the ordinary and the extraordinary.

The ordinary call corresponds to the continuous evaluation activities carried out during the two-month period, these are the questionnaires, exercises and activities about the concepts discussed, and individual work.

If the course is not passed in these activities of continuous evaluation, it will be possible to access to an extraordinary evaluation. In this one, it is only necessary to recover the evaluation activities that were failed. The recovery process for each activity will follow the same format as the one used in the regular evaluation. For example, the recovery of a deliverable exercise will be carried out by means of a new delivery; or, to recover a quiz, another one will be carried out.

In any of the calls, in order to pass the course it is necessary to pass the minimum grade of the individual work. In case of not passing it, the final grade will be the minimum of 4.9 and the average obtained as a result of computing all the evaluation activities.

If the quota of honors of the subject is completed in the ordinary call, students who take the extraordinary call will not be eligible for the grade of honors.

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