

## DTC-MBD-526 NoSQL Storage System

**SEMESTER:** Spring

**CREDITS:** 60 hours

**LANGUAGE:** Spanish/English

**DEGREES:** Master in Big Data Technologies and Advanced Analytics

### Course overview

This course is an introduction to the use of non SQL databases (Hbase as reference) and the utility of this kind of databases in a business intelligence environment. How to design, create, populate, manipulate and administrate them.

Also, an overview of SQL databases will be shown as a starting-point to analyze the differences between these two ways of organizing and accessing the information.

### Prerequisites

Basic knowledge of Programming languages is required, ideally in Java or Python.  
Basic knowledge in Hadoop architecture and HDFS.

## Course contents

### Theory:

1. Relational databases
  - 1.1. Basics of Normalization and Design
  - 1.2. Basics of SQL
  - 1.3. Advanced SQL
  - 1.4. Security
2. Non SQL databases introduction
3. HBASE
  - 3.1. Architecture
  - 3.2. Schemas and tables
  - 3.3. Modelling
  - 3.4. How to access/load information (APIs; Hive; Spark; Presto)
  - 3.5. Development best practices
4. Impala
5. Others NoSQL databases: Mongo, Ne04J, Cassandra y Redis
6. Mixed Architectures.

### Textbook

While we will not follow a textbook, we find the following books quite remarkable in their central topics

- **Lars George**, (2011). *Hbase: the definitive guide*. 1st Edition. O'Reilly.
- **Jason Price.**, (2009), *SQL in a Nutshell: A Desktop Quick Reference Guide*. 3rd Edition. O'Reilly

### Grading

The overall grade is obtained as follows:

The first part of the subject 30%: (Relational Database, SQL)

- Final exam: 60%.
- Laboratory session work (in class and homework): 40%.

The second part of the subject 70%: (NoSQL, HBase, Impala y otros)

- Final exam: 50%.
- Laboratory session work (in class and homework): 30%.
- Final Project: 20%.

In order to pass the course, the mark of the final exam must be greater or equal to 5 out of 10 points

*This document is a brief outline of the course and does not replace the official program of study*