

Academic Year: ( 2024 / 2025 )

Review date: 26-04-2024

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: MORENO LOPEZ, LOURDES

Type: Compulsory ECTS Credits : 6.0

Year : 4 Semester : 1

**REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)**

Files and databases (2 course / 2 semester))  
 Programming (Course: 1 / Semester: 1)  
 Data Structures and Algorithms (Course: 1 / Semester: 2)  
 Computer Structure (Curso: 2 / Cuatrimestre: 1)

**SKILLS AND LEARNING OUTCOMES**

- ¿ Identify different data management solutions depending on the data structure
- ¿ Understand and apply noSQL database technologies to store structured and unstructured data.
- ¿ Know and apply the principles of database administration (confidentiality, availability and integrity).

**DESCRIPTION OF CONTENTS: PROGRAMME**

1. Introduction to Data Architectures
  - \* Data types and metadata
  - \* Types of data repositories
  - \* Databases: Relational and NoSQL
2. NoSQL Databases
  - \* General characteristics of NoSQL databases
  - \* Types of NoSQL databases: Aggregation models and graph-oriented
  - \* NoSQL Database Managers: Design, operations, queries
  - \* Administration: Distribution and clustering
3. Management of Relational Databases
  - \* Role and responsibilities of the database administrator
  - \* Handling storage and security
  - \* Transactions, concurrency, backup, and recovery
4. Management of Databases in the Cloud
  - \* Introduction to Cloud Computing
  - \* Cloud services for database management

**LEARNING ACTIVITIES AND METHODOLOGY**

- \* Lectures: 1 ECTS. The objective is to present theoretical concepts and techniques for designing and managing storage systems and architectures.
- \* Practical/Lab sessions: 1 ECTS. The objective is the development of specific instrumental skills, as well as problem-solving skills and application of knowledge.
- \* Continuous assessment tests (individual work): 1ECTS. The objective is to complete the development of the specific instrumental skills and start the development of the specific attitudinal skills, as well as the transversal skills of problem-solving and application of knowledge.
- \* Projects (in-group): 2.5 ECTS. The objective is to complete and integrate the development of all the specific skills related to the resolution and implementation of practical cases where the problem

statement, the choice of resolution method, the results obtained, and their interpretation are well documented.

\* Tutorials: individualized assistance (individual tutorials) or group (collective tutorials) to students by the teacher.

\* Final exam: 0.5 ECTS. The objective is the development of specific cognitive and procedural abilities. It especially reflects the use of master classes.

## ASSESSMENT SYSTEM

**% end-of-term-examination:** 60

**% of continuous assessment (assignments, laboratory, practicals...):** 40

FINAL EXAM. The overall knowledge, skills, and abilities acquired throughout the entire course will be evaluated.

CONTINUOUS ASSESSMENT. Projects, presentations, participation in debates, in-class presentations, exercises, practical cases, and work carried out in the workshops throughout the entire course will be evaluated.

\* Continuous Assessment (40%): Includes two mandatory practical assignments, each focused on a Database Management System.

\* Final Exam (60%): Evaluates all concepts covered throughout the course. To pass the subject, it is mandatory to obtain a minimum grade of 4 out of 10 on this exam