

Academic Year: (2024 / 2025)

Review date: 03-09-2024

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: MORENO LOPEZ, LOURDES

Type: Basic Core ECTS Credits : 6.0

Year : 3 Semester : 1

Branch of knowledge: Engineering and Architecture

DESCRIPTION OF CONTENTS: PROGRAMME

T1. Introduction

- * History of Database Systems
- * Information Systems: Definition and relevance of databases and Database Management Systems.
- * Methodology. Data Modelling. Data Model

T2. Relational Databases

- * Database Design: Principles of the Relational Model.
- * SQL Language: Basic structure, queries, and advanced operations.
- * Introduction to Relational Database Management.

T3. NoSQL Databases

- * Comparison of Relational Databases with New NoSQL Stores: Advantages and Limitations.
- * Types of NoSQL Databases
- * NoSQL Database Managers: Design, operations, queries

LEARNING ACTIVITIES AND METHODOLOGY

AF1: THEORETICAL & PRACTICAL CLASSES. The knowledge students must acquire will be presented. Students will receive class notes and be provided with basic reference texts to better follow the classes and carry out the subsequent projects. Students will solve exercises, tackle practical problems, and participate in workshops and assessment exams so that they can acquire the necessary abilities.

AF3: STUDENTS' INDIVIDUAL OR GROUP WORK.

AF8: WORKSHOPS AND LABORATORIES.

MD1: THEORETICAL CLASS. The professor will give in-class presentations, including computer and audiovisual aids in which the course's main concepts are developed. Additional materials and literature will also be provided in order to supplement the students learning.

MD2: PRACTICAL CASES. Students will be required to resolve case studies, problems, etc., posed by the professor individually and in groups.

ASSESSMENT SYSTEM

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|---|----|
| % end-of-term-examination: | 50 |
| % of continuous assessment (assignments, laboratory, practicals...): | 50 |

SE1: FINAL EXAM. The overall knowledge, skills, and abilities acquired throughout the course will be evaluated.

SE2: 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 (50%): Includes three mandatory practical assignments using different database management systems.

* Final Exam (50%): Evaluates all concepts covered throughout the course. To pass the subject, obtaining a minimum grade of 4 out of 10 in this exam is mandatory.

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|---|----|
| % end-of-term-examination: | 50 |
| % of continuous assessment (assignments, laboratory, practicals...): | 50 |

BASIC BIBLIOGRAPHY

- Connolly, Thomas M, Begg, Carolyn E Database systems : a practical approach to design, implementation, and management, Addison Wesley, 2015
- Elmasri, Ramez, Navathe, Sham Fundamentals of database systems, Pearson Addison Wesley, 2017
- Ramakrishnan, Raghu, Gehrke, Johannes Database management systems, McGraw-Hill, 2003

ADDITIONAL BIBLIOGRAPHY

- Redmond, E. & Wilson Seven Databases in Seven Weeks: A Guide to Modern Databases and the NoSQL Movement , The Pragmatic Bookshelf, 2010
- Sadalage, P. & Fowler NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence, Pearson Education, 2013

BASIC ELECTRONIC RESOURCES

- MongoDB . MongoDB Docs: <https://www.mongodb.com/docs/>
- ORACLE . Oracle Database Documentation: <https://docs.oracle.com/en/database/oracle/oracle-database/>