

Academic Year: ( 2024 / 2025 )

Review date: 25-04-2024

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: MARTINEZ FERNANDEZ, PALOMA

Type: Compulsory ECTS Credits : 6.0

Year : 2 Semester : 1

## OBJECTIVES

This course aim is to understand the databases roll in an Information System, to know the features which define a Databases System, and to acquire skills to implement a Databases Systems through different data models.

- Analysis and synthesis abilities
- Organize and plan abilities
- Troubleshooting
- Teamwork
- Ability to apply knowledge in practice

Cognitive (Knowledge)

- Fundamentals of Databases
- Databases development methodology
- Relational data model

Procedural/Instrumental (Know how)

- Database Design to different abstraction levels
- Implementing Database Systems using a DBMS

Attitudinal (To be)

- Ability to create designs (creativity)
- Discuss and clarify the diverse solutions for a problem

## DESCRIPTION OF CONTENTS: PROGRAMME

1. Data Life cycle
2. Data modelling: describing data at different levels
3. Components of a database management system (DBMS)
4. Relational data model
5. Use of a declarative query language: SQL
6. Data governance and information management roles
7. Managing unstructure data: SQL and NoSQL databases

## LEARNING ACTIVITIES AND METHODOLOGY

AF1. THEORETICAL-PRACTICAL LECTURES. These lectures will present the knowledge that students should acquire. They will receive the lecture notes and will have basic texts of reference to facilitate the follow-up of the classes and the development of the subsequent work. Exercises, practical problems on the part of the student will be solved, and workshops and evaluation tests will be carried out to acquire the required skills.

AF2. TUTORIES. Individualized assistance (individual tutorials) or group (collective tutorials) to students given by the teacher.

### AF3. INDIVIDUAL OR GROUP STUDENT WORK.

MD1 THEORY LECTURE. Talks with support of computer and audiovisual media, in which the main concepts of the subject are developed and the materials and bibliography are provided to complement the students' learning process.

MD2. PRACTICES. Resolution of practical cases, problems, etc. organized by the teacher individually and/or in groups.

MD3. TUTORIES. Individualized assistance (individual tutorials) or group (collective tutorials) to students given by the teacher. For 6 credits subjects, 4 hours will be dedicated with 100% of attendance required.

### ASSESSMENT SYSTEM

<b>% end-of-term-examination:</b>	50
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	50

#### - Ordinary call

1. If the student follows continuous assessment:

SE1. FINAL EXAMINATION. This exam will globally assess the knowledge, skills and abilities acquired throughout all the term (50%)

SE2. CONTINUOUS ASSESSMENT.

Midterm exam I (10%)

Midterm exam II (10%)

Final mandatory project (30%).

2. If the student does not follow continuous assessment, he/she will take a final exam with 60% of the grade. This exam will globally assess the knowledge, skills and abilities acquired throughout all the term.

#### - Extraordinary call

Students who do not pass the course in the ordinary exam will have an extraordinary exam.

1. If the student does not follow continuous assessment

SE1. FINAL EXAMINATION. This exam will globally assess the knowledge, skills and abilities acquired throughout all the term (50%)

SE2. CONTINUOUS ASSESSMENT.

Midterm exam I (10%)

Midterm exam II (10%)

Final mandatory project (30%).

2. If the student does not follow the continuous assessment, he/she will take a final exam for 100% of the grade in which the knowledge, skills and abilities acquired throughout the course will be globally assessed.

### BASIC BIBLIOGRAPHY

- Dolores Cuadra, Elena Castro, Ana M<sup>a</sup> Iglesias, Paloma Martínez, Fco. Javier Calle, Cesar de Pablo, Harith Al-Jumaily, Lourdes Moreno Desarrollo de Bases de Datos: Casos prácticos desde el análisis a la implementación, RA-MA, 2012

- Gaurav Vaish Getting Started with NoSQL, Packt Publishing, 2013

- Henry Korth, S. Sudarshan, Abraham Silberschatz Database System Concepts, 6th edition, McGraw-Hill Education, 2010

- Ramez Elmasri, Shamkant B. Navathe Fundamentals of Database Systems , Pearson, 2017

### BASIC ELECTRONIC RESOURCES

- . SQL Oracle Tutorial: <https://www.oracletutorial.com/>