

|                          |                  |               |                |  |     |
|--------------------------|------------------|---------------|----------------|--|-----|
| Course Unit              | Database Systems |               | Field of study | Computer Science                                       |     |
| Bachelor in              | Multimedia       |               | School         | School of Public Management, Communication and Tourism |     |
| Academic Year            | 2022/2023        | Year of study | 2              | Level  | 1-2 |
| Type                     | Semestral        | Semester      | 1              | ECTS credits   | 6.0 |
| Workload (hours)         |                  |               | 162            | Contact hours  |     |
|                          |                  |               | T              | -  | TP  |
|                          |                  |               | 60             | PL   | -   |
|                          |                  |               | TC             | -  | S   |
|                          |                  |               | E              | -  | OT  |
|                          |                  |               | O              | -  |     |
| Code 9213-656-2102-00-22 |                  |               |                |  |     |

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Elisabete da Anunciacao Paulo Morais

### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Know all the components of a Database Management System.
2. Map UML class diagrams to relational databases.
3. Use Structured Query Language (SQL) to define and manipulate databases.
4. Acquire fundamental concepts of Distributed Databases.

### Prerequisites

Before the course unit the learner is expected to be able to:  
Not applicable.

### Course contents

Database Management Systems; Object oriented modeling and design; SQL Language; Distributed Database Concepts

### Course contents (extended version)

1. Database Management Systems
  - Characteristics of a DBMS
  - Requirements for a DBMS
  - Components of a DBMS
  - Users of a DBMS
2. Object oriented modeling and design
  - Diagram of UML classes
  - Entity-association model (E-A)
  - Relational schema
  - Mapping UML and E-A to Relational
3. SQL Language
  - SQL data definition language and integrity constraints
  - SQL data manipulation language
  - Views
  - Triggers
  - Stored Procedures
4. Distributed Database Concepts
  - Centralized Systems
  - Client / Server Architecture
  - Distributed Architecture
  - Data Replication and Fragmentation

### Recommended reading

1. DAMAS, L. (2006). SQL. 6ª Edição Atualizada e Aumentada. FCA – Editora de Informática. ISBN 972-722-443-1.
2. KORTH, H. F. ; SILBERSCHATZ, A. (2007). Sistemas de Bancos de Dados. editora Makron. ISBN 0-07-044754-3.
3. PEREIRA, J. L. (1998). Tecnologia de Bases de Dados, 3ª edição. FCA – Editora de Informática. ISBN 972-722-143-2.
4. Ramos, P. (2007). Desenhar Bases de Dados com UML (2ª edição). Lisboa: Edições silabo. ISBN 978-972-618-474-4
5. Magalhães, A. (2013). SQL Server 2012, Curso Completo. Lisboa: FCA – Editora de Informática. ISBN: 978-972-722-746-4

### Teaching and learning methods

Theoretical approach of descriptive and illustrative presentation of concepts, case studies and examples. Throughout the lessons, presental and not presental hours, students must participate in the discussion and implementation of practical exercises, with the objective of developing databases.

### Assessment methods

1. Continuous distributed assessment - (Regular) (Final, Supplementary)
  - Final Written Exam - 40% (Assessment of degree of knowledge about concepts learned. Minimum grade seven values.)
  - Projects - 50% (Application of knowledge in the realization of a database, from modeling to development.)
  - Development Topics - 10% (Presentation and discussion of a DBMS.)
2. Distributed assessment - (Regular, Student Worker) (Final, Supplementary, Special)
  - Final Written Exam - 50% (Assessment of degree of knowledge about concepts learned. Minimum grade seven values.)
  - Practical Work - 50% (Application of knowledge in the realization of a database, from modeling to development.)
3. Mobility students - (Regular, Student Worker) (Final, Supplementary, Special)
  - Practical Work - 100% (Application of knowledge in the realization of a database, from modeling to development.)

### Language of instruction

Portuguese, with additional English support for foreign students.

## Electronic validation

|                                      |                       |                                      |                              |
|--------------------------------------|-----------------------|--------------------------------------|------------------------------|
| Elisabete da Anunciacao Paulo Morais | Ana Lucia Jesus Pinto | Elisabete da Anunciacao Paulo Morais | Luisa Margarida Barata Lopes |
| 07-10-2022                           | 10-10-2022            | 10-10-2022                           | 16-10-2022                   |