



UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Data Bases

Academic Year 2023/2024

1. Organic Unit

Faculty of Business and Economic Sciences

2. Course

Computer Engineering

3. Cycle

1st

4. Course Unit

Data Bases (L9017)

5. Scientific Area

6. Curricular Year

2nd

7. Type of Curricular Unit / Semester

2nd Semester



UNIVERSIDADE LUSÍADA
LISBOA

8. Class type and workload (work time)

Theoretical classes:

Practical classes:

Theoretical-Practical Classes 30,00

Tutorial Guidance: 20,00

9. ECTS Credits

6,00

10. Scientific Area Coordinator

11. Regent

Prof. Doutor PAULO JORGE GONÇALVES PINTO

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

The objective of this curricular unit focuses on the need for students of the Computer Engineering course to know how to deal with the concepts inherent in the implementation and exploitation of a database, but also with techniques for designing and optimizing them. The aim is to acquire skills with a relational database engine from requirements to optimized implementation and exploitation through an appropriate language (SQL: ISO/IEC 9075:*)

15. Specific Objectives

Students should learn, on the one hand, the theory of Normalization, in order to be able to represent in a logical scheme the information needs at the level of data support.

They should also know how to implement that same model in a commercial relational database management system (SQL Server 2019).

For handling information, they should also learn to use the SQL language (ISO/IEC 9075:*) and know how to manipulate data structures and explore through "ad-hoc" queries.

16. Skills to be acquired

At the end of the course, students should be able to model, implement and explore a relational database. They should also be able to modify the structure of a database to adapt to new requirements arising from their own use.



UNIVERSIDADE LUSÍADA
LISBOA

17. Teaching Methodology

All content will be given in theoretical-practical classes in which, following the theoretical exposition, laboratory implementations will be carried out.

18. Course Unit Program

- * Normalization: 1st, 2nd and 3rd Normal Forms
- * Comparison between Top-Down (DEA) and Bottom-Up (Normalization) analyzes
- * Continuation of normalization: BCNF, 4th, 5th and 6th Normal Forms. Exercises
- * Information access strategies: Indexes
- * Optimization and denormalization. Exercises
- * Implementation of Relational Databases
- * SQL-2003 (ISO/IEC 9075:*):
- * DDL: Language for defining data structures (CREATE, ALTER, DROP)
- * DML: Data manipulation language (SELECT, UPDATE, DELETE, INSERT)
- * Definition of the external model (VIEW)
- * Implementation of relations (CONSTRAINT clause)
- * Authorization Management (GRANT, REVOKE)
- * SQL language exercises
- * Elaboration of a project in SQL Server/C# for the application of the subject.

19. Assessment Methods

Students, after theoretical-practical learning of both techniques and tools, will have to implement solutions to specific problems to be posed during classes.

Will be considered 2 written tests and a work.

20. Didactic Resources

Students will have their classes in a laboratory that will include access to a SQL Server 2017 server where they will not only be able to practice the subjects taught in classes, but, through access outside of school hours, self-study and self-familiarization with the tools.

21. Sustainability Objectives

- 4. Quality Education
- 5. Gender Equality
- 9. Industry, Innovation and Infrastructure

22. Keywords

Data base
Normalization
Relational SQL



UNIVERSIDADE LUSÍADA
LISBOA

23. Main Bibliography

Author(s): DATE, Chistopher J,
Title: Database Design and Relational Theory: Normal Forms and All That Jazz
Edition: 1 Year: 2012
Local: USA
Publisher: O'Reilley Media, Inc

Author(s): OPPEL, Andy
Title: Databases DeMYSTiFieD
Edition: 2 Year: 2011
Local: United States of America
Publisher: McGraw-Hill

Author(s): ISO/IEC
Title: ISO/IEC 9075-*: 2003 - Databases Languages - SQL
Edition: Year: 2003
Local:
Publisher:

24. Complementary Bibliography

Author(s): CODD, Edgar F.
Title: A Relational Model of Data for Large Shared Data Banks (artigo)
Edition: Year: 1970
Local: Communications of the ACM, Volume 13, number 6
Publisher: P. Baxendale

Author(s): DAMAS, Luís
Title: SQL
Edition: 14^a Year: 2017
Local: Lisboa
Publisher: FCA-Editora de Informática



UNIVERSIDADE LUSÍADA
LISBOA

Ficha técnica MIP / MIP Datasheet	
Título / Title	Course Unit Program 'BASES DE DADOS': Academic Year 2023/2024
Autor / Author	Prof. Doutor PAULO JORGE GONÇALVES PINTO
Classificação / Classification	-
Descritores / Descriptors	-
Colaborador(es) / Colaborator(s)	-
Data Hora / Date Time	
Formato de dados / Data Format	Texto / Text, PDF
Estatuto de utilização / Usage	Acesso público / Public Access
Relação / Relation	Version 2,0
(c) Universidade Lusíada, 2024	