INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Databases I			Field of study	Information Systems	
Bachelor in	Informatics Engineering			School	School of Technology and Management	
Academic Year	2023/2024	Year of study	2	Level	1-2	ECTS credits 6.0
Type	Semestral	Semester	1	Code	9119-706-2102-00-23	

Workload (hours)	162	Contact hours	T -	TP 60	PL -	TC -	S -	E -	OT -	O -

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)	Leonel Domingues Deusdado, Reis Lima Quarteu

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Have a global view of the databases development process
2. Know the evolutionary process and history of databases
3. Know the different techniques of modelling data
4. Know the different types of physical implementation of databases
5. Know the structure and functions of a DataBase Management System
6. Know the diferent techniques for data standardization
7. Know and use the MySQL development environment
8. Know and use the Microsoft Access development environment

Prerequisites

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

Course contents

Unit 1: Introduction to Database Environments; Unit 2: Database Management Systems; Unit 3: Data Normalization; Unit 4: Data Modeling; Unit 5: Relational Algebra and SQL; Unit 6: Microsoft Access

Course contents (extended version)

1. Introduction to Database Environments
    - Concept of Information System
    - Information in Organizations
    - Information Technologies
    - Information Management
2. Database Management Systems
    - Approach and Advantages
    - DBMS Architecture
    - Users in a DBMS
3. Data Normalization
    - Concept of the Data Normalization Process
    - Functional Dependencies
    - Data Normalization techniques - Normal Forms
4. Data Modeling
    - Maintenance of Integrity
    - Redundancy and Keys
    - E-R Diagrams
    - Relational Model
5. Relational Algebra and SQL - (MySQL)
    - Concepts and Application of Relational Algebra
    - MySQL Administration Tools
    - DDL Commands
    - DML Commands
6. Microsoft Access
    - Access Environment
    - Advanced Tasks

Recommended reading

1. SQL Fundamentals - John J. Patric - Prentice Hall - 2004
2. Desenhar Bases de Dados – Pedro Ramos - Edições Silabo – 2006
3. Access 2019 Bible - Michael Alexander et Al- John wiley & sons inc - 2019
4. Fundamentos de Bases de Dados - Feliz Gouveia - Editora FCA - 2014
5. Diapositivos e Sebenta da Unidade Curricular BD1 - 2023/2024

Teaching and learning methods

Theoretical and practical presential lessons, with extra learning tasks to be carried out in laboratory environment

Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final, Supplementary, Special)
    - Final Written Exam - 50% (Required Minimal Grade: 7 values)
    - Practical Work - 50% (3 Practical Assessments, resolved in the Classroom)
2. Alternative 2 - (Student Worker) (Special)
    - Final Written Exam - 100%

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Language of instruction

1. Portuguese
2. English

Electronic validation

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02-10-2023	07-10-2023	16-10-2023	31-10-2023