INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Databases II			Field of study	Information Systems								
Bachelor in	Informatics and Communications			School	School of Public Management, Communication and Tourism								
Academic Year	2023/2024	Year of study	2	Level	1-2	ECTS credits	6.0						
Type	Semestral	Semester	1	Code	9188-320-2101-00-23								
Workload (hours)	162	Contact hours	T -	TP 40	PL 20	TC -	S -	E -	OT 20	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): Jose Luis Bandeira Rodrigues Martins

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Modeling databases using object oriented models and implement them.
2. Acquire fundamental concepts of Distributed Databases.

Prerequisites

Before the course unit the learner is expected to be able to:
Relational Databases Concepts and SQL language

Course contents

Modeling and project object oriented: Modeling of Objects, Object Model versus Relational Model. Concepts of Distributed Databases: Centralized System, Client / Server Architecture, Distributed Architecture , Distributed architecture based on Internet, Parallel Architecture. Data Replication. Data Fragmentation. Characteristics of a distributed database. Design of Distributed Databases. DDB heterogeneous. Management of DDB. Installation and configuration of DBMS.

Course contents (extended version)

1. Modeling and project object oriented:
   - Modeling
   - Abstraction
   - Models object oriented
   - Characteristics of objects
   - Development of OO
   - Modeling Objects
   - Objects, classes, links, associations, operations and methods
   - Generalization, Inheritance and Multiple Inheritance
   - Groupings-Aggregation
   - Object Model versus Relational Model
2. Concepts of Distributed Databases
   - Centralized System
   - Architecture Client / Server
   - Distributed Architecture
   - Distributed architecture based on Internet
   - Parallel Architecture
   - Data Fragmentation and data replication
3. Characteristics of a Distributed Database
4. Design of Distributed Databases
5. Processing and optimization queries
6. Heterogeneous Distributed Databases
7. Management Distributed Databases
8. Installation, configuration and implementation of administrative tasks on DBMSs
   - Creation of store procedures
   - Creation of triggers
   - Users management
   - Roles Creation

Recommended reading

1. Rosa, A. (2018). SQL Server 2016, Curso Completo. Lisboa: FCA – Editora de Informática. [ISBN: 978-972-722-886-7]
2. Damas, L. (2017). SQL - 14ª Edição Actualizada e Aumentada. Lisboa: FCA – Editora de Informática. [ISBN: 978-972-722-829-4]
3. Gouveia, F. (2021). Bases de Dados - Fundamentos e Aplicações. Lisboa: FCA – Editora de Informática. [ISBN: 9789727229017]
4. Nunes, M. e O'Neill, H. (2004). Fundamental de UML 3ª Edição Actualizada e Aumentada. Lisboa: FCA – Editora de Informática. 978-972-722-481-4
5. Ramos, P. (2007). Desenhar Bases de Dados com UML (2ª edição). Lisboa: Edições silabo. [ISBN 978-972-618-474-4]

Teaching and learning methods

This course is taught through theoretical and practical classes (there is always the theoretical framework and then examples / exercises), and if this is conducive, it can be turned into lessons for monitoring the practical work.

Assessment methods

1. Final assessment - (Regular, Student Worker) (Final)
   - Practical Work - 60% (Minimum grade seven values.)
   - Final Written Exam - 40% (Minimum grade seven values.)
2. Assessment by Final Exam - (Regular, Student Worker) (Supplementary, Special)
   - Practical Work - 40% (Minimum grade seven values.)
   - Final Written Exam - 60% (Minimum grade seven values.)
3. Mobility Studentes - (Regular) (Final, Supplementary, Special)
   - Final Written Exam - 100% (Minimum grade seven values.)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

Jose Luis Bandeira Rodrigues Martins	Vítor José Domingues Mendonça	Anabela Neves Alves de Pinho	Luisa Margarida Barata Lopes
16-10-2023	19-10-2023	19-10-2023	20-10-2023