Course Unit	Databases II			Field of study	Information Systems		
Bachelor in	Informatics Engineering			School	School of Technology and Management		
Academic Year	2022/2023	Year of study	2	Level	1-2	ECTS credits	6.0
Type	Semestral	Semester	2	Code	9119-706-2201-00-22		

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

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)	João Paulo Ribeiro Pereira, Davide Emanuel da Silva Dias, Marisa Cristina Torrado Ortega, Reis Lima Quarteu

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Learn the structure of PL/SQL blocks
2. Know the language PL/SQL
3. Make administrative tasks in Oracle XE
4. Project and develop applications in Oracle APEX
5. Understand different types of databases
6. Understand the concept of non-relational DBs (NoSQL data), working with semi-structured data from several sources

Prerequisites

Before the course unit the learner is expected to be able to:
Knowledge of SQL

Course contents

Unit 1: PL/SQL Language; Unit 2: ORACLE DB Administration and ORACLE APEX (Low code); Unit 3: Non-relational DBs (NoSQL data)

Course contents (extended version)

1. PL/SQL language
   - PL/SQL Concepts
   - SQL Statements in a PL/SQL block (SQL in PL/SQL)
   - Restricting Rows, Sorting Data, and Joining Data from Multiple Tables
   - Single-Row Functions and Group Functions (aggregate functions)
   - Subqueries
   - Control Structures and Exception Handling
   - Cursors (for Data Retrieval) and Advanced Data Types (Collections and Records)
   - Stored Procedures and Stored Functions
   - Packages and Views
   - Triggers
2. ORACLE DB Administration and ORACLE APEX
   - Administrative tasks (ORACLE XE)
   - Development of applications in ORACLE APEX
3. Non-relational DBs (NoSQL data)
   - Introduction to Non Relational Databases
   - Distribution of Data to manage large volumes of information - BigData
   - Development of Nonrelational Technologies
   - Introduction to MongoDB: Create, insert, search and remove documents

Recommended reading

1. Oracle 11G: SQL 2nd Edition - "Joan Casteel" - 2010
2. Advanced Oracle PL/SQL Developer's Guide - Second Edition 2nd Edition - "Saurabh K. Gupta" - 2016
3. Beginning Oracle Database 11g Administration: From Novice to Professional - "Ignatius Fernandez" - 2009
4. Mastering Oracle SQL and SQL*Plus - "Lex deHaan" - 2015

Teaching and learning methods

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

Assessment methods

- Alternative 1 - (Regular, Student Worker) (Final, Supplementary, Special)
   - Practical Work - 50% (ORACLE and NoSQL (MongDB) Database Design and Implementation)
   - Final Written Exam - 50% (Minimum exam grade of 7 values)

Language of instruction

1. Portuguese
2. English

Electronic validation

João Paulo Ribeiro Pereira	José Luís Padrão Exposto	Luísa Maria Garcia Jorge	José Carlos Rufino Amaro
23-02-2023	23-02-2023	08-03-2023	10-03-2023