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| Course Unit | Databases II | Field of study | Information Systems |
| Bachelor in | Management Informatics | School | School of Technology and Management |
| Academic Year | 2023/2024 | Year of study | 2 |
| Type | Semestral | Semester | 2 |
| Level | 1-2 | ECTS credits | 6.0 |
| Code | 9186-709-2201-00-23 | | |
| 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) Carla Manuela Gomes Martins , João Paulo Ribeiro Pereira

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. Aggregation Operations

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
5. MongoDB: The Definitive Guide: Powerful and Scalable Data Storage - "Shannon Bradshaw" - 2019

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)
 - Practical Work - 60% (ORACLE and NoSQL (MongoDB) Database Design and Implementation)
 - Final Written Exam - 40% (Minimum exam grade of 7 values)
2. Alternative 2 - (Regular, Student Worker) (Supplementary, Special)
 - Practical Work - 45% (ORACLE Database Design and Implementation)
 - Final Written Exam - 55% (Minimum exam grade of 7 values)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

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| Carla Manuela Gomes Martins , João Paulo Ribeiro Pereira | Tiago Miguel Ferreira Guimaraes Pedrosa | José Carlos Rufino Amaro | Nuno Adriano Baptista Ribeiro |
| 29-02-2024 | 14-03-2024 | 16-03-2024 | 16-03-2024 |