

Course Unit	Databases and Data Mining	Field of study	Computer Science
Master in	Technology and Animal Science	School	School of Agriculture
Academic Year	2021/2022	Year of study	1
Type	Semestral	Semester	1
Workload (hours)	162	Contact hours	T - , TP 60, PL - , TC - , S - , E - , OT 20, O -
Level	2-1	ECTS credits	6.0
Code	5026-453-1102-00-21		

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) **Pedro Miguel Lopes Bastos**

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. The student should obtain the fundamentals of the database system, characteristics and the technologies used.
2. Understand the role of the Systems Database Management and the features that it offers at the Application level.
3. Understand the properties, areas of application and limitations of the main databases models, emphasizing the relational model.
4. Develop the needed skills for the conceptual models design of data and corresponding models of databases.
5. Understand the process of knowledge discovery in databases. The importance of the information for the organization. The objectives of the Mining Date process. The knowledge discovery bedding.
6. The learner must be able to apply typical cases of techniques most common of data mining.
7. Understand the fundamental issues associated with Distributed Databases. Knowing the tools to exploit Databases in the decision-making process: analytical processing of data and data mining.

Prerequisites

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

Course contents

Introduction to the Database Management Systems; Data manipulation language; Databases Application Tool; The Knowledge Discovery in Databases process and Data Mining

Course contents (extended version)

1. Introduction to the databases systems managers
 - Basic concepts; Relational model; ER Diagrams.
2. Data manipulation language.
 - SQL language, basic concepts, practical applications.
3. Databases
 - Integrity, security and permissions; normalization.
4. Application tool
 - Microsoft Access study: tables, queries, forms, web pages, macros and modules.
5. The knowledge discovery in databases process
 - Basic concepts and terminology; study of the whole process: actors and steps.
6. Data Mining
 - Objectives, algorithms and techniques; Practical cases using a Data Mining tool.

Recommended reading

1. Planeamento de sistemas de informação, Luís Alfredo Martins do Amaral / João Eduardo Quintela Varajão, FCA, ISBN 978-972-722-579-8
2. A arquitectura da gestão de sistemas de informação, João Eduardo Quintela Varajão, FCA, ISBN 978-972-722-507-1
3. Domine a 110% Access 2010, Sérgio Sousa, FCA, ISBN 978-972-722-707-5
4. M. F. Santos, C. Azevedo, Data Mining, FCA. ISBN: 972-722-509-8. - Ian Witten, Eibe Frank, Morgan Kaufmann, Data Mining: practical machine learning tools and techniques with java implementations.
5. Andrew Chisholm, Exploring Data with RapidMiner, Packt Publishing Ltd, ISBN 978-1-78216-933-8

Teaching and learning methods

Classes with availability of tutorial content and implementation examples. Learning of informatics tools; Work applied for solidification of knowledge, materialize in the accomplishment of works counting as intercalate practical evaluations.

Assessment methods

- Alternative 1 - (Regular, Student Worker) (Final, Supplementary, Special)
 - Final Written Exam - 20%
 - Practical Work - 80%

Language of instruction

Portuguese

Electronic validation

Pedro Miguel Lopes Bastos	Sérgio Alípio Domingues Deusdado	Alfredo Jorge Costa Teixeira	Ramiro Corujeira Valentim
29-11-2021	03-12-2021	07-12-2021	10-12-2021