COURSE DATA

Data Subject

Code	44651
Name	Management and manipulation of information
Cycle	Master's degree
ECTS Credits	3.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
2221 - M.U. en Ciencia de Datos	School of Engineering	1	First term

Subject-matter

Degree	Subject-matter	Character
2221 - M.U. en Ciencia de Datos	3 - Management and manipulation of information	Obligatory

Coordination

Name	Department
CERVERON LLEO, VICENTE	240 - Computer Science

SUMMARY

This course covers different models and technologies for structuring, storing and retrieving data using database management systems, both the most widely used relational model and new models, generically NoSQL databases, developed for large scale data including unstructured data.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

VNIVERSITAT ĐĐ VALÈNCIA

OUTCOMES

2221 - M.U. en Ciencia de Datos

- Students should demonstrate self-directed learning skills for continued academic growth.

- Ability to access and manage information in different formats for subsequent analysis in order to obtain knowledge from data.

- Ser capaces de acceder a herramientas de información (bibliográficas y de empleo) y utilizarlas apropiadamente.

- Ser capaces de asumir la responsabilidad de su propio desarrollo profesional y de su especialización en uno o más campos de estudio, aplicando los conocimientos adquiridos en la identificación de salidas profesionales y yacimientos de empleo.

- To know and use the different models of data storage and database management systems using programming languages for the definition, query and handling of data.

LEARNING OUTCOMES

Knowledge of the problems when storing and managing information.
Knowledge of the different databases, mainly the most widespread and used.
Querying / filtering / aggregating data in databases.
Manage SQL and NoSQL databases.

DESCRIPTION OF CONTENTS

1. Database system concepts

Basic database system concepts.

2. Relational databases

The relational model. Relational database design.

3. SQL

Structured Query Language.

4. NoSQL databases

Large scale data. Unstructured data. Document databases. Column-oriented databases. Graph-oriented databases.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theoretical and practical classes	30,00	100
Study and independent work	12,00	0
Readings supplementary material	12,00	0
Preparation of evaluation activities	8,00	0
Resolution of case studies	13,00	0
TOTAL	**75,00**	

TEACHING METHODOLOGY

The course will combine the theoretical and the practical part, without separating sessions devoted to theory from those devoted to practice. The lessons will be taught in a computer equipped classroom.

In the theoretical part of the classes, the teacher will introduce the concepts and methods Statistics and Optimization, with examples and exercises to be solved by the students.

The practical sessions will be synchronized with the theory. In these sessions, the students will learn by solving problems, exercises and case studies, in order to acquire the skills of this course.

EVALUATION

The educational evaluation of knowledge and skills achieved by the students will mainly be made continuously throughout the course, and will consist in the following blocks of evaluation:

1. Exercises and work submitted during the course: 70% of the final grade.

2. Final exam: 30% of the final grade (being necessary a minimum of 4).

In case of a second chance, the two blocks are maintained with their weights; a new examination will be done and grades obtained in block 1 will be retained, although delivery of the exercises and works will be allowed to raise the score of that part.

REFERENCES

Basic

- Fundamentos de bases de datos
  Abraham Silberschatz, Henry F. Korth, S. Sudarshan
  Ed. McGraw-Hill

- Sistemas de gestión de bases de datos
  Raghu Ramakrishnan, Johannes Gehrke
  Ed. McGraw-Hill

- Sistemas de Bases de Datos
  Ramez A. Elmasri, Shamkant B. Navathe
  Pearson Educación,

- Getting Started with SQL
  Thomas Nield
  O'Reilly Media

- NoSQL Databases
  Christof Strauch
  Stuttgart Media University

- Cassandra
  Tutorials Point

- MongoDB Succinctly
  Agus Kurniawan
  Syncfusion

- Graph Databases
  Ian Robison, Jim Webber, Emil Eifrem
  OReilly Media