COURSE DATA

DATA SUBJECT

Code: 33846
Name: Databases
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1007 - Degree in Information and Documentation	Facultat de Geografia i Història	3	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1007 - Degree in Information and Documentation	Information technologies and digital editing	COMPULSORY

COORDINATION

FUERTES SEDER ARIADNA

SUMMARY

The course Databases consists of 6 ECTS credits and is taught in 3rd year, 5th semester of the degree. It is framed within the field of Information Technology and Digital Publishing.

Its main objective is to present the principles of database systems with an emphasis on how are used in the development of information systems. So, the student will be able to:

- To acquire a historical context about databases.
- To know the characteristics and components of the Database Management Systems (DBMS) and to understand its way of operation.
- To present the theoretical foundations and the data representation models.
- To introduce the basic aspects of the relational data model.
- To know the data definition and manipulation languages.
- To learn to use the BD management languages from the point of view of the user, as the basic tool to work with data in a relational database. Structured Query Language (SQL).
- To introduce a methodology for designing relational databases, covering the conceptual design and logical design.
- To understand and manage the theory of Normalization.

Among the topics covered in this course, the principles and designs of how to organize the information stored on a computer and how to update and retrieve such information will be treated.

This course aims to provide students with a basic training in the creation of relational databases and learn to interact with them using a query language. So that, they will know as such information is organized and thus the possibilities offered by the information system.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

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

It is advisable to have taken the Sistemas de representación de información y conocimiento (3er semester) and Arquitectura de la información en la Web (4th semester) courses prior to taking this course, it means, in the order established by semesters.

COMPETENCES / LEARNING OUTCOMES

1007 - Degree in Information and Documentation

Be able to apply critical reasoning to the analysis and assessment of alternatives.

Be able to design information products and services in any field and by any means of dissemination (electronic edition) according to the information and training needs detected in a community of users.

Be able to learn independently.

Be able to search and retrieve information by methods that meet the expectations and needs of users in optimal conditions of cost and time.

Be able to use and put into practice methods, techniques and computer tools (hardware or software) for the design, implementation, development and operation of information systems.

Be able to work in a team and to integrate into multidisciplinary teams.

Capacity to write analytical reports and summaries with regard to management and organisation of information.

Demonstrate organisational and planning skills.

Have computer skills related to the field of study.

Have decision-making capacity.

Have problem-solving skills.

Have skills for information management.

Know, use and apply information and communication technologies applied to the storage, use, management, handling, distribution and exploitation of data, information and knowledge.

Know, use and apply the computer and telecommunications tools that support the development of the set of skills that must be acquired in the training process.

Know a foreign language.

Show creativity.

Show ethical commitment in the relationships with users and in information handling.

Understand, design and apply models for data and information representation, and mechanisms for data extraction and exploitation and for information retrieval.

DESCRIPTION OF CONTENTS

1. Introduction to the Data Bases

Lecture 1. Introduction
1.1.- Evolution of DB technologies
1.2.- File management systems.
1.3.- DB Systems. Database Management Systems.
1.4.- Classification of the DB.

The objectives of this subject are:
- To acquire a historical context of databases.
- To know the characteristics and components of a databases management system and overall understanding of how it works.

2. Relational DataBases

Lecture 2. Relational Databases
2.1 Basic concepts of relational databases.
2.2 Methodology to design for the relational DB.

The objectives of this subject are:
- To view the fundamentals and the designs for database.
- To present the basic aspects of the relational data model.
- To present a methodology for designing relational databases, covering the conceptual design and logical design that will be developed on the following topics.

3. Conceptual design of relational databases

Lecture 3. Conceptual design of relational databases
3.1 The Entity-Relationship Model

This topic presents the Entity-Relationship Model as conceptual design methodology of relational databases.

4. Logical data model of relational databases

Lecture 4. Logical data model of relational DB.
4.1 The relational model.
4.2 Relational Algebra.

The objectives of this subject are as folows:
- To present the relational model as a model of logical design.
- To present the relational algebra as the language for the manipulation of relational data.

5. Query languages. SQL

Lecture 5. Query languages. SQL

The objectives of this subject are:
- To know the data definition and manipulation languages.
- To acquire mastering for the DB management languages from the user's point of view.
- To understand and manage the SQL language.

6. Theory of Normalization

Lecture 6. Theory of Normalization

This subject aims to understand and manage the theory of normalization in order to design relational databases

7. Laboratory sessions

This section corresponds to the contents of the laboratory sessions.
The objectives are:

- To learn the use of a basic database management system so as allows us to entering design constraints seen in the theoretical part.
- To learn to extract the information contained in a database using a query language, in this case, SQL.
- To learn to use developer tools such as data entry forms or reporting of results of a query to interact more friendly way with the database.

Eleven sessions will be held and the student will learn:
- To view and manipulate a database management system (DBMS).
- To create database in DBMS.
- To create data entry forms in DBMS.
- To create reports in DBMS.
- To create SQL queries into DBMS.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	37,50
Laboratory	22,50
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	5,00
Individual or group project	25,00
Independent study and work	20,00
Preparation of lessons	25,00
Preparation for assessment activities	11,00
Resolution of case studies	4,00
Total hours	**90,00**

TEACHING METHODOLOGY

REGULAR LECTURES:

- Attendance to theoretical-practical lectures: 37.5 hours of active lectures where the most difficult aspects of the lesson will be explained and also the students' questions will be answered about the subject which should have prepared. After, any activity that requires the involvement of students will be introduced, so that 1) they can do an activity based on the content they have just learnt, 2) they recover the level of attention to the next block.

The resolution of these exercises will make students on the blackboard and the proposed solution will be discussed thus ensures that participate more actively in the resolution of problems. In addition, the teacher may pose a more elaborate solution which is then projected by the projector cannon. With this technique we get students to see different approaches to the same problem.

- Attendance at laboratory sessions: there are 22.5 hours of lessons in computer room. These lessons are based on solving practical cases that the student must bring prepared. Attendance at laboratory sessions is mandatory and will be checked by the teacher (see the section on "Evaluation Practice").

Each session of laboratory will be 2 hours of duration and the student will learn to manage some DBMS and the databases will be implemented on this. This databases will be resolved in the theory classes, so that students can resolve the doubts such as the theoretical aspects as implementation itself.

For these sessions, students will have reviewed the main concepts to be used in the development of practice and to have read and understood the proposed statement. All of this will be reflected on the possible solution of the same.

For each subject the teacher deems appropriate, the student will solve a proposed exercise which will serve as a little test. It will take place during the first half hour of class.

THEORETICAL-PRACTICAL LECTURES PREPARATION:

Students will have to prepare the contents of the corresponding lecture, according to the planning of the course. To do this they used the basic and specific bibliography, as well as the material that will eventually provide them with the teacher. The total preparation time is approximately 20 hours.

PREPARATION OF PRACTICAL WORK:

Students spend about 40 hours or exercises solving practical issues proposals on the topics covered in lectures and then can be further implemented in the computer.

REALIZATION OF TEAMWORK:

A set of problems will be proposed that should be solved in teams of three or four persons. These groups will work collaboratively specific proposals by the teacher during the lectures or at home.

TUTORING:

There will be some tutoring hours per week where the lecturer will assist students to clarify concepts or doubts that have arisen during the lectures. It is estimated at 5 hours.

EVALUATION

The assessment of the course in the first examination period will be carried out through the evaluation of the knowledge, skills, and competencies acquired by students, both individually and within a group-work environment, following a continuous assessment scheme in which the following aspects will be considered:

1. Written examination:

A single final written examination of a theoretical and practical nature will be held. This examination will assess, on the one hand, the understanding of theoretical and conceptual aspects and the associated formalism through questions or simple case studies. On the other hand, it will evaluate students' ability to solve problems by applying the relevant formalism, as well as their critical thinking regarding the results obtained. To pass the course, students must obtain a minimum score of 5 out of 10 in this examination.

The grade obtained in this test will account for 50% of the final grade.

2. Continuous practical assessment of the knowledge acquired throughout the academic year:

a) Throughout the course, students' work will be assessed through assignments, presentation of results, questions proposed and discussed in class, oral presentations of solved problems, and any other method involving interaction and feedback on students' work. Some of these activities will be carried out individually, while others will be completed in teams. This component will account for 15% of the final grade. This activity will not be recoverable in the second examination period.

b) In addition, students will receive a practical grade based on the assessment of short tests carried out during practical sessions in the computer laboratory, which are mandatory. These tests will demonstrate the skills acquired through computer-based exercises and the presentation of results, including the creation of the proposed databases, query formulation, and the development of possible data-entry forms and reporting tools. This component will account for 35% of the final grade. Students who do not complete a test will receive a grade of zero for that test. If a student misses more than one test, their practical assessment will automatically be deferred to the second examination period.

The composition of the final grade in the first examination period is summarized as follows:

- Final Examination: 50%
- Theoretical Questions and Exercises: 15%
- Practical Tests Conducted in the Computer Laboratory: 35%

In the second examination period, assessment will consist of a theoretical examination (50% of the final

grade), a practical activity carried out in the laboratory (35% of the final grade), and the grade obtained for the questions and exercises from the first examination period (15% of the final grade). Students must obtain at least 5 out of 10 in each component. The teaching staff may decide whether grades obtained in components passed during the first examination period can be retained.

The same assessment criteria will be applied to all students in the second examination period.

This assessment starts from the premise that teaching at the University of Valencia is, by definition, on-campus lecture delivery method. In this sense, the student should be aware that attendance at both the theoretical and practical lectures is essential for proper monitoring of the contents of the course. The student must also consider the possibility to enroll part time when it is unable to attend all courses (60 credits). However, there is an exception for those students that justify it and request it. They have the possibility of being assessed without attending to all or part of the lectures. For these cases, students should proceed as follows:

- At the beginning of the course, student should inform to lecturer responsible for the course, the incidence that makes her/him unable to attend the class. This must be adequately justified in documentary form.
- The lecturers in charge, in the light of this information, will decide the possibility of evaluation without full or partial assistance to the lectures.

Students who are in this situation must submit for evaluation all work required by the lecturer (not necessarily the same to those required for the course) and may also be called to defend them orally to the lecturer, and conduct a knowledge test. The weight of the final grade work will be 50% and the test the remaining 50% knowledge.

Regarding the obligations that students have when using AI in assessable activities, and concerning the declaration of responsible AI use, please refer to the "Guidelines for the Responsible Use of Artificial Intelligence (AI) in Teaching and Assessment Activities at the University of Valencia" at the following link: https://www.uv.es/graus/normatives/Guia_actuacio_IA_UV.pdf.

REFERENCES

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