

## 30219 - Databases

### Syllabus Information

**Academic Year:** 2019/20

**Subject:** 30219 - Databases

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura  
326 - Escuela Universitaria Politécnica de Teruel

**Degree:** 443 - Bachelor's Degree in Informatics Engineering  
439 - Bachelor's Degree in Informatics Engineering

**ECTS:** 6.0

**Year:** 2

**Semester:** Second semester

**Subject Type:** Compulsory

**Module:** ---

## 1.General information

### 1.1.Aims of the course

### 1.2.Context and importance of this course in the degree

### 1.3.Recommendations to take this course

## 2.Learning goals

### 2.1.Competences

### 2.2.Learning goals

### 2.3.Importance of learning goals

## 3.Assessment (1st and 2nd call)

### 3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

## 4.Methodology, learning tasks, syllabus and resources

### 4.1.Methodological overview

The learning process of this course is based on:

- The presentation of contents by the professors, and the resolution of exercises in class.
- The personal study by the students and their participation in class in solving exercises.
- The development of practical assignments by the students, oriented by the professors, who will develop the theoretical knowledge acquired.

It must be taken into account that, although the course has a practical orientation, acquiring the needed theoretical knowledge is also required. Therefore, the learning process emphasizes both the theoretical concepts and the individualized-study as well as the development of practical work.

### 4.2.Learning tasks

The course includes the following learning tasks:

- In the classes, the program of the course will be developed.
- In problem classes, problems applying the concepts and techniques presented in the course syllabus will be solved.
- Lab classes will be developed in a computer lab. In those sessions, the students will perform practical assignments related to the subject, and basically with the design, management and/or database exploitation.

### 4.3.Syllabus

The course will address the following topics:

- 1. Introduction
  - 1.1 Database Management Systems (DBMS)
  - 1.2 Database Design
- 2. Conceptual Database Design
  - 2.1 Entity-Relationship Model (E/R). Notation
  - 2.2 Conceptual Design Methodology. Practical examples
- 3. Logical Database Design
  - 3.1 Data Models. Relational Model. Relational Algebra (RA)
  - 3.2 Normalization
  - 3.3 Relational Languages: Structured Query Language (SQL)
  - 3.4 Study Cases
- 4. Physical Database Design
  - 4.1 Physical storage and organization of information y organización física de la información
  - 4.2 Physical design of Relational Databases
  - 4.3 Adjustment, monitoring y optimization. Adaptation to the available DBMS
- 5. Database Exploitation
  - 5.1 Recovery and concurrency management
  - 5.2 Interaction with a DBMS
  - 5.3 Database Administration

### 4.4.Course planning and calendar

The calendar of classes, lab sessions and exams, as well as the dates of delivery of evaluation assignments, will be announced in advance, according to the sessions and dates established by the School.

The course/subject consists of 6 ECTS credits, of which 2,4 credits belong to Face-To-Face (F2F) class and 3,6 off-site credits. So, student dedication to achieve the learning outcomes in this course, it is estimated at 150 hours (60 F2F y 90 off-site) distributed as follows:

- 57 hours, approximately, of F2F sessions (theoretical classes, problems and labs).
- 40 hours for the preparation of the practical exercises and design work database.
- 50 hours of effective personal study (notes and texts, troubleshooting, preparation of lesson and lab sessions, database design).
- 3 hours of the written final exam.

### 4.5.Bibliography and recommended resources

#### Zaragoza:

- BB Elmasri, Ramez. Fundamentos de sistemas de bases de datos / Ramez Elmasri, Shamkant B. Navathe ; traducción, José Manuel Díaz . 5ª ed. Madrid [etc.] : Pearson Addison Wesley, D.L. 2007
- BB Silberschatz, Abraham. Fundamentos de bases de datos / Abraham Silberschatz, Henry F. Korth, S. Sudarshan ; revisión técnica Jesús Sánchez Allende . 6ª ed. Aravaca (Madrid) : McGraw-Hill Interamericana, D. L. 2014
- BB Takahashi, Mana. The Manga guide to databases / Mana Takahashi, Shoko Azuma, Trend-pro Co., LTD. . Tokyo : Ohmsha ; San Francisco, CA : No Starch Press, cop. 2009
- BC Connolly, Thomas M.. Sistemas de bases de datos : un enfoque práctico para diseño, implementación y gestión / Thomas M. Connolly, Carolyn E. Begg ; traducción, Vuelapluma . 4ª ed. Madrid [etc.] : Pearson Educación, D.L. 2005
- BC Tecnología y diseño de bases de datos / Mario G. Piattini Velthuis ... [et al.] . Paracuellos de Jarama (Madrid) :

**Teruel:**

- BB Elmasri, Ramez. Fundamentos de sistemas de bases de datos / Ramez Elmasri, Shamkant B. Navathe ; traducción, José Manuel Díaz . - 5ª ed. Madrid [etc.] : Pearson Addison Wesley, D.L. 2007
- BB Silberschatz, Abraham. Fundamentos de bases de datos / Abraham Silberschatz, Henry F. Korth, S. Sudarshan ; traducción Fernando Sáenz Pérez, Antonio García Cordero, Jesús Correas Fernández ; revisión técnica Luis Grau Fernández . - 5ª ed. Aravaca (Madrid) : McGraw-Hill Interamericana, D. L. 2006
- BC Connolly, Thomas M.. Sistemas de bases de datos : un enfoque práctico para diseño, implementación y gestión / Thomas M. Connolly, Carolyn E. Begg ; traducción, Vuelapluma . - 4ª ed. Madrid [etc.] : Pearson Educación, D.L. 2005
- BC Tecnología y diseño de bases de datos / Mario G. Piattini Velthuis ... [et al.] . Paracuellos de Jarama (Madrid) : RA-MA, D.L. 2006