



## IDENTIFYING DATA

### Databases

Subject	Databases			
Code	006G460V01203			
Study programme	(*)Grao en Intelixencia Artificial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	2nd	1st
Teaching language	#EnglishFriendly Spanish Galician			
Department				
Coordinator	Lorenzo Iglesias, Eva María			
Lecturers	A0570-Ax2tc-3 A0570-Ax2tc-3, A0570-Ax2tc-3 Celard Pérez, Pedro Lorenzo Iglesias, Eva María			
E-mail	eva@uvigo.es			
Web	<a href="http://moovi.uvigo.gal">http://moovi.uvigo.gal</a>			
General description	The course focuses on learning the main concepts related to the design of relational databases and their declarative query. The theoretical foundations of the relational model will be introduced and database design will be approached from the point of view of conceptual Entity-Relationship modelling. The standard SQL language will be used for the implementation of databases and their declarative query. Special attention will be paid to its application in the field of AI.			
	English Friendly subject: International students will be able to ask the teaching staff for: a) materials and bibliographic references to follow the subject in English, b) tutorials in English, c) tests and evaluations in English.			

## Training and Learning Results

Code	
A2	That students know how to apply their knowledge to their work or vocation in a professional manner and possess the competencies that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.
A5	That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.
B2	Ability to solve problems with initiative, decision making, autonomy and creativity.
B4	Ability to select and justify the appropriate methods and techniques to solve a specific problem, or to develop and propose new methods based on artificial intelligence.
C12	To know and apply the characteristics, functionalities and structure of database systems and distributed databases that allow their adequate use and the implementation of Artificial Intelligence solutions that can include large volumes of data.
D2	Ability to work as part of a team, in interdisciplinary environments and managing conflicts
D3	Ability to create new models and solutions in an autonomous and creative way, adapting to new situations. Initiative and entrepreneurial spirit.

## Expected results from this subject

Expected results from this subject	Training and Learning Results			
RA1: Carry out the design of a system of database from some initial requirements.	A2	B2 B4	C12	D2 D3
RA2: Comprise the methodology of design and the aims and utility of each one of the phases that compose it.	A5	B2	C12	
RA3: Make the physical implementation of the design, using the main sentences of the language SQL for the definition of the diagram, the management of the data, and his declarative query on line.		B2 B4	C12	D2

RA4: From the requirements, determine the models of data and technologies more adapted of storage and analysis.	A2	B4	C12	D2 D3
RA5: Know the main theoretical concepts of the relational model.	A5	B2	C12	
RA6: Comprise the diagram of a relational database, and be able to modify and manipulate the data stored in the database, using the functionalities of the systems of management of databases.	A2	B4	C12	

## Contents

Topic	
Introduction	Introduction to the Database Management Systems
Relational model.	Relational model. Design of relational databases.
SQL	Definition of diagrams and management of data with SQL. Declarative query with SQL.
Management of transactions and security.	Management of transactions. Security.
Database models for the IA.	Database models for the IA.

## Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	11	16.5	27.5
Problem solving	12	24	36
Laboratory practical	26	44.5	70.5
Objective questions exam	2	14	16

\*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

## Methodologies

	Description
Lecturing	Oral exhibition complemented with the use of audiovisual means and the approach of questionnaires directed to the students, with the purpose to transmit knowledges and facilitate the learning.
Problem solving	Technician by means of which has to resolve a concrete problematic situation, from the knowledges worked, that can have more than a solution.
Laboratory practical	Methodology that allows that the students learn sure enough through the realisation of activities of practical character, such like demonstrations, exercises, experiments and investigations. CONTINUOUS EVALUATION Character: Optative Assistance: No compulsory GLOBAL EVALUATION Character: Optative

## Personalized assistance

Methodologies	Description
Problem solving	Technician by means of which has to resolve a concrete problematic situation, from the knowledges worked, that can have more than a solution. The mentoring sessions will be able to make by telematic means (email, videoconference, MOOVI,...) Under the modality of prior agreement.
Laboratory practical	Technician by means of which has to resolve a concrete problematic situation, from the knowledges worked, that can have more than a solution. The mentoring sessions will be able to make by telematic means (email, videoconference, MOOVI,...) Under the modality of prior agreement.

## Assessment

	Description	Qualification	Training and Learning Results			
Problem solving	Proof in which the/the student has to solve a series of problems and/or exercises in a time/condition established/ace by the teacher. Expected results from this subject evaluated: RA1, RA3, RA4, RA6	50	A2	B2 B4	C12	D3
Laboratory practical	It bases in the application of the theoretical foundations of the matter Expected results from this subject evaluated: RA1	20	A2	B4		D2 D3
Objective questions exam	Proofs that evaluate the knowledge that includes enclosed questions with different alternative of answer (true/false, multiple election, pairing of elements...). The students selects an answer between a number limited of possibilities.Expected results from this subject evaluated: RA2, RA5	30	A5	B2	C12	

## Other comments on the Evaluation

## **CONTINUOUS ASSESSMENT SYSTEM**

### **TEST 1: Theoretical evaluation**

Description: Completion of questionnaires and exam tests throughout the course which will include evaluation of theoretical concepts and exercise resolution.

Methodologies applied: Problem solving, Examination of objective questions.

Grading: 40% Minimum: 1.5 points

Minimum: 1.5 points (out of 4).

Learning and training outcomes: A5, B2, C12

Intended outcomes of the subject: RA2, RA4, RA5

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### **TEST 2: Practical MERE**

Description: Performance and defence of a group practical that will consist of solving a problem using MERE. In addition, the transformation to the Relational Model must be carried out.

Methodology applied: Laboratory practicals.

% Marking: 20% Minimum: 1 point (out of 1)

Minimum: 1 point (out of 2).

Training and Learning Outcomes: A2, B4, D2, D3

Expected results in the subject: RA1

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### **TEST 3: SQL Practice**

Description: Individual written test consisting of carrying out queries on a database using SQL language.

Methodology applied: Problem solving

Marking: 25% Minimum: 1 point (out of 1,000)

Minimum: 1 point (out of 2.5).

Training and learning outcomes: A2, B2, D3

Intended learning outcomes: RA3

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### **TEST 4: Data Manipulation**

Description: Individual test involving the resolution of exercises related to the modification and manipulation of data stored in a database.

Methodology applied: Problem solving

Marking: 15% Minimum: 0.5 points

Minimum: 0.5 points (out of 1.5).

Learning and training outcomes: A2, B4, C12

Intended learning outcomes: RA6

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## **OVERALL ASSESSMENT SYSTEM**

**Procedure for choosing the overall assessment mode:** The student is considered to opt for the overall assessment system if he/she does not sit the first exam that forms part of Test 1 Theoretical assessment of the continuous assessment

system.

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### **TEST 1: Theoretical assessment**

Description: Objective test that will include evaluation of theoretical concepts and exercise resolution.

Methodology(ies) applied: Problem solving, Examination of objective questions.

Grading: 40% Minimum: 1.5 points

Minimum: 1.5 points (out of 4).

Training and learning outcomes: A5, B2, C12

Intended learning outcomes of the subject: RA2, RA4, RA5

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### **TEST 2: MERE, SQL AND DATA MANIPULATION**

Description: Individual test consisting of solving problems using MERE, transformation to the Relational Model, carrying out queries using SQL language and manipulating data on a database.

Methodologies applied: Problem solving.

Marking: 60% Minimum: 2.5 points

Minimum: 2.5 points (out of 6).

Training and learning outcomes: A2, B2, B4, C12, D2, D3

Intended subject outcomes: AR1, AR3, AR6

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### **ASSESSMENT CRITERIA FOR THE EXTRAORDINARY AND FINAL YEAR EXAMINATIONS**

#### **Students under the continuous assessment system:**

- They must take Test 1, which is detailed below, if they have not achieved a mark of 1.5 points (out of 4) in Test 1 of continuous assessment at the first sitting.
- You must take Test 2, as detailed below, if you have not achieved the minimum marks in continuous assessment Tests 2, 3 and 4 at the first sitting.

#### **Students under the global assessment system:**

- They must take Test 1, which is detailed below, if they have not achieved the grade of 1.5 points (out of 4) in Test 1 of global assessment at first sitting.
  - You must take Test 2, as detailed below, if you have not achieved the minimum mark of 2.5 (out of 6) in Test 2 of global assessment at the first sitting.
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### **TEST 1: Theoretical evaluation**

Description: Objective test that will include evaluation of theoretical concepts and exercise resolution.

Methodology(s) applied: Problem solving, Examination of objective questions.

Grading: 40% Minimum: 1.5 points

Minimum: 1.5 points (out of 4).

Training and learning outcomes: A5, B2, C12

Intended learning outcomes of the subject: RA2, RA4, RA5

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## TEST 2: MERE, SQL AND DATA MANIPULATION

Description: Individual test consisting of solving problems using MERE, transformation to the Relational Model, carrying out queries using SQL language and manipulating data on a database.

Methodologies applied: Problem solving.

Marking: 60% Minimum: 2.5 points

Minimum: 2.5 points (out of 6).

Training and learning outcomes: A2, B2, B4, C12, D2, D3

Expected results in the subject: RA1, RA3, RA6

### **QUALIFICATION PROCESS OF ACTS**

Independently of the evaluation system and the call, in case of not passing any part of the evaluation, but the overall score is higher than 4 (out of 10), the qualification in acts will be 4.

### **EVALUATION DATES**

The dates of the tests corresponding to the continuous assessment system will be published in the calendar of activities, available on the ESEI web page <https://esei.uvigo.es/docencia/horarios/>.

The official dates of the exams of the different calls, officially approved by the ESEI Board of Directors, are published in the ESEI web page <https://esei.uvigo.es/docencia/horarios/>.

### **USE OF MOBILE DEVICES**

All students are forbidden to use mobile devices in exercises and practices, in compliance with article 13.2.d) of the University Student Statute, related to the duties of university students, which establishes the duty to "Refrain from using or cooperating in fraudulent procedures in evaluation tests, in the work carried out or in official university documents".

### **CONSULTATION/REQUEST FOR TUTORIALS**

Tutorials can be consulted through the personal page of the teaching staff, accessible through <https://esei.uvigo.es/docencia/profesorado/>

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#### **Sources of information**

##### **Basic Bibliography**

Elmasri, R.; Navathe, S.B., **Fundamentos de sistemas de Bases de Datos**, 9788478290857, 5, Addison-Wesley, 2007  
A. Silberschatz, H.F. Korth, S. Sudarshan, **Fundamentos de Sistemas Bases de Datos**, 9788448190330, 6, McGraw-Hill, 2014  
Rivero C. Enrique, et. al., **Introducción al SQL para Usuarios y Programadores**, 9788497320825, 2, Paraninfo, 2002  
Ramakrishnan, R.; Gehrke, J., **Database Management Systems**, 9780071151108, 3, McGraw-Hill, 2002

##### **Complementary Bibliography**

Date C. J., **Introducción a los Sistemas de Bases de Datos**, 9789684444195, 7, Prentice Hall, 2001  
A. de Miguel, M Piattini, **Fundamentos y modelos de Bases de Datos**, 9788478973613, 2, Ra-Ma, 1999

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#### **Recommendations**

##### **Subjects that are recommended to be taken simultaneously**

Algorithms/O06G460V01201

##### **Subjects that it is recommended to have taken before**

IT:/O06G460V01104  
IT: Programming 1/O06G460V01103  
IT: Programming 2/O06G460V01109  
Mathematics:/O06G460V01105