

BASIC DETAILS:

Subject:	TECNOLOGÍAS DE LA INFORMACIÓN		
Id.:	31843		
Programme:	DOBLE GRADO EN INGENIERÍA INFORMÁTICA Y DISEÑO Y DESARROLLO DE VIDEOJUEGOS		
Module:	GESTION DE LA INFORMACION Y EL CONOCIMIENTO		
Subject type:	OBLIGATORIA		
Year:	3	Teaching period:	Segundo Cuatrimestre
Credits:	6	Total hours:	150
Classroom activities:	68	Individual study:	82
Main teaching language:	Inglés	Secondary teaching language:	Castellano
Lecturer:		Email:	

PRESENTATION:

The Information Technologies course addresses the following contents to be applied during the acquisition, processing, storage, and transport of information: access, transactions and concurrency control in databases, No-SQL databases, Data warehousing, and Big Data. In this course, the emphasis is on the practical and real use of different databases, not just the relational ones.

PROFESSIONAL COMPETENCES ACQUIRED IN THE SUBJECT:

General programme competences	G02	Innovative capacity to propose and find new and efficient ways to undertake any task and/ or function within the professional environment - highly motivated by quality.
	G03	Capacity to work in multidisciplinary teams to achieve common objectives, placing group interests before personal ones.
	G10	Critical and analytical capacity when assessing information, data and courses of action.
	G12	Capacity to undertake professional activities with integrity, respecting social, organisational and ethical norms.
	G13	Capacity to use individual learning strategies aimed at continuous improvement in professional life and to begin further studies independently.
	G14	Capacity for abstraction to handle various complex knowledge models and apply them to examining and solving problems.
	G15	Capacity to structure reality by means of linking objects, situations and concepts through logical mathematical reasoning.
Specific programme competences	E01	Capacity to understand the engineering profession and commitment to serve society under the corresponding professional code of conduct.
	E02	Capacity to apply the intrinsic engineering principles based on mathematics and a combination of scientific disciplines.
	E03	Capacity to recognise the technical principles and apply the appropriate practical methods satisfactorily to analyse and solve engineering problems.
	E08	Capacity to communicate productively with clients, users and colleagues both orally and in writing, so as to pass on ideas, solve conflicts and achieve agreements.
	E10	Capacity to understand and assess the impact of technology on individuals, organisations, society and the environment, including ethical, legal and political factors, recognising and applying the pertinent standards and regulations.s éticos, legales y políticos, reconociendo y aplicando los estándares y regulaciones oportunos
	E12	Capacity to manage complexity through abstraction, modelling, 'best practices', patterns, standards and the use of the appropriate tools.
	E13	Capacity to identify, assess and use current and emerging technologies, considering how they apply in terms of individual or organisational needs.
	E17	Capacity to identify and analyse user needs with the intention of designing effective, usable IT solutions which can be incorporated into the user's operating environment.

PRE-REQUISITES:

It is recommended to have attended Information Systems. Failing that, knowledge of the relational models of data and relational databases will be required.

SUBJECT PROGRAMME:

Subject contents:

1 - Relational Databases
1.1 - Architectures
1.2 - Transactions and Concurrency Control
2 - NoSQL Databases
2.1 - Document Databases
2.2 - Key-Value Databases
2.3 - Wide-Column Stores
2.4 - Graph Databases
3 - Data Warehousing
3.1 - Data Warehousing
3.2 - Data Analysis: OLAP and DSS
3.3 - Data Integration (ETL)
4 - Big Data
4.1 - Distributed Data Processing technologies
4.2 - Cloud Computation

Subject planning could be modified due unforeseen circumstances (group performance, availability of resources, changes to academic calendar etc.) and should not, therefore, be considered to be definitive.

TEACHING AND LEARNING METHODOLOGIES AND ACTIVITIES:

Teaching and learning methodologies and activities applied:

This course will use the following methodologies in order to give the students the best opportunity to develop their competences: lectures, workshops, and tuition sessions.

Lectures will be used to explain the basis of the different chapters. When possible, explanations will be accompanied by images and simple examples to be used as discussion topics and facilitate the understanding. The slides of the lectures will be available in the Online University Platform (pdu.usj.es) and students should be able to expand their content with the class explanations and other bibliographic resources.

Workshops will be used to apply and test the concepts learned during the lectures using different technologies. All readings, practices and works will be announced using the Online University Platform (pdu.usj.es). In the individual works, students must study the material presented and try to solve the exercises and problems proposed. In the group work, students will use the problem-based learning methodological strategy. Moreover, the practical work will be the goal and responsibility of the whole group.

Tuition sessions will be scheduled with the students upon the beginning of the course. There will be a weekly 2 hour slot assigned for individual and group tuitions. During the defined schedule, the lecturer will be available to answer the students' questions concerning the course.

Participation in class will be accounted in the final score.

Student work load:

Teaching mode	Teaching methods	Estimated hours
Classroom activities	Master classes	10
	Workshops	53
	Assessment activities	5
Individual study	Tutorials	5
	Individual coursework preparation	64
	Group coursework preparation	5
	Research work	8

	Total hours: 150
--	-------------------------

ASSESSMENT SCHEME:

Calculation of final mark:

Individual coursework:	50	%
Group coursework:	10	%
Final exam:	30	%
Participation:	10	%
TOTAL	100	%

*Las observaciones específicas sobre el sistema de evaluación serán comunicadas por escrito a los alumnos al inicio de la materia.

BIBLIOGRAPHY AND DOCUMENTATION:

Basic bibliography:

ELMASRI, Ramez; NAVATHE, Shamkant B. Fundamentals of Database Systems. Addison Wesley, 2007 (5th edition), 2010 (6th edition)

Recommended bibliography:

Recommended websites:

Extensible Markup Language (XML)	http://www.w3.org/XML/
IEEE Data Engineering Bulletin	http://www.informatik.uni-trier.de/~ley/db/journals/debu/index.html
Learning Center of the ACM	http://learning.acm.org/
Microsoft SQL Server	http://www.microsoft.com/sqlserver/en/us/default.aspx
Oracle Database	http://www.oracle.com/us/products/database/index.html
Pentaho Business Analytics	http://www.pentaho.com/
PostgreSQL open source database	http://www.postgresql.org/

* Guía Docente sujeta a modificaciones