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Databases and Data Modeling

Academic Year: (2019 / 2020)   **Review date: 30-04-2019**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: MARTINEZ FERNANDEZ, PALOMA

Type: Compulsory ECTS Credits : 6.0

Year : 2 Semester : 1

OBJECTIVES

CB1. Students should demonstrate to possess and understand knowledge in an area of ¿¿study that starts from the fundamentals of secondary education, and it is usually found at a level that, although supported by advanced textbooks, also includes some aspects that imply knowledge coming from the forefront of his field of study.
CB3. Students will gain the ability to gather and interpret relevant data (usually within their area of ¿¿study) to make judgments that include a reflection on relevant issues of social, scientific or ethical nature.
CG3. Be able to manage, identify, gather and interpret relevant information on issues related to business in the digital age.
CT3. Be able to assess the reliability and quality of information and its sources using such information in an ethical manner, avoiding plagiarism,
CE12. To know information technology foundations from mechanisms of information representation.

DESCRIPTION OF CONTENTS: PROGRAMME

1: Data management and databases management systems
1. Data Life cycle
2. Information management roles
3. Components of a database management system (DBMS)
2: Data modelling and use of databases
4. Data modelling: describing data at different levels
5. Relational data model
6. Use of a declarative query language: SQL
7. Managing structured, semi-structured and unstructured data.
8. Differences between relational and semi-structured data models: SQL and NoSQL databases

LEARNING ACTIVITIES AND METHODOLOGY

AF1. THEORETICAL-PRACTICAL LECTURES. These lectures will present the knowledge that students should acquire. They will receive the lecture notes and will have basic texts of reference to facilitate the follow-up of the classes and the development of the subsequent work. Exercises, practical problems on the part of the student will be solved, and workshops and evaluation tests will be carried out to acquire the required skills.
AF2. TUTORIES. Individualized assistance (individual tutorials) or group (collective tutorials) to students given by the teacher.
AF3. INDIVIDUAL OR GROUP STUDENT WORK.
MD1 THEORY LECTURE. Talks with support of computer and audiovisual media, in which the main concepts of the subject are developed and the materials and bibliography are provided to complement the students' learning process.
MD2. PRACTICES. Resolution of practical cases, problems, etc. organized by the teacher individually and/or in groups.
MD3. TUTORIES. Individualized assistance (individual tutorials) or group (collective tutorials) to students given by the teacher. For 6 credits subjects, 4 hours will be dedicated with 100% of attendance required.

ASSESSMENT SYSTEM

SE1. FINAL EXAMINATION. This test will globally assess the knowledge, skills and abilities acquired throughout all the term.
SE2. CONTINUOUS ASSESSMENT. Mid term exam and evaluation of a mandatory practical work.

% end-of-term-examination: 60

% of continuous assessment (assigments, laboratory, practicals…):   40

BASIC BIBLIOGRAPHY

 - Gaurav Vaish Getting Started with NoSQL, Packt Publishing, 2013

 - Henry Korth, S. Sudarshan, Abraham Silberschatz Database System Concepts, 6th edition, McGraw-Hill Education, 2010

 - Ramez Elmasri, Shamkant B. Navathe Fundamentals of Database Systems , Pearson, 2017