espol Escuela Superior
Politécnica del Litoral

Course Syllabus

DATABASE SYSTEMS

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Program: Computer Science

1. Course number and name
TICG1001 - DATABASE SYSTEMS

2. Credits and contact hours
3 credits and 4 contact hours

3. Instructor's course or coordinator's name
IRENE MEIYING CHEUNG RUIZ

4. Text book, tittle, author, and year
*Thomas Connolly. Database Systems: A Practical Approach to Design, Implementation, and Management (6th Edition)

a.Other supplemental materials

*Coronel, C., & Morris, S. Database Systems: Design, Implementation and Management (12)

*Garcia-Molina, Hector & Ullman, Jeffrey D. & Widom, Jennifer. Database systems: the complete book ((International ed.))

5. Specific course information
a.   Brief description of the content of the course (catalog description)

This course presents the fundamental concepts for the design and implementation of database systems. During this course, you will examine the entity-relationship (ER) diagram, which allows the conceptualization of the requirements. Furthermore, the ER diagrams allows the formal modelling implemented in a relational database management system (RDBMS). In addition, you will use structured query language for data manipulation. You will understand an optimization plan of a query execution through relational algebra. Finally, you will address to basic security concepts and new alternatives in the development of applications with relational databases.

b.   Prerequisites

PROGRAMMING FUNDAMENTALS - CCPG1001

c.   This course is a: Required

6. Specific goals for the course
a.   Specific outcomes of instruction

1.- Design a relational scheme based on a conceptual model using the entity-relationship diagram, for the data management of a business model.

2.- Apply relational algebra operators for table manipulation in a database schema.

3.- Apply structured query language for data manipulation.

4.- Design transactions within a real program for tasks management in a database efficently.

5.- Apply security control language for the administration of user privileges.

b.   Explicity indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course

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    (2) Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

    (3) Communicate effectively in a variety of professional contexts.

    (7) An ability to lead, manage and undertake projects.

7. Brief list of topics to be covered

    1.- Conceptual Database Model

    2.- Relational Databases

    3.- Relational Algebra

    4.- Structured query language and optimization

    5.- Objects and advanced structures

    6.- Control and security