ESCUELA TÉCNICA SUPERIOR
DE
INGENIERÍA

DTC-GITT-124 Fundamentals of Telecommunication Systems

SEMESTER: Spring

CREDITS: 7.5 ECTS (5 hrs. per week: 2 Theory + 3 Lab, on average)

LANGUAGE: Spanish

DEGREES: GITT

Course overview

The course is intended to provide an introduction to operating systems and databases, with particular emphasis on practical aspects (such as installing and managing a Unix system or the design and query of relational databases).

After completing the course students should be able to:

- Understand and manage Unix environments, through study, installation and basic use of a Linux system.
- Understand and use basic commands of the Linux shell (command interpreter) for manipulating processes, files, permissions, and basic tools.
- Managing a Linux system using basic administration commands of the Linux shell.
- Ability to identify information requirements and formalize them logically.
- Understand the theoretical concepts of relational databases.
- Perform the logical design of a relational database.
- Implement the logical design of a relational database.
- Perform interactive query formulation and embedded in programs.

Prerequisites

No prerequisites are required

Course contents

1. Introduction to the Linux Operating System.

2. Basic commands for working with files and directories.

3. Handling file contents.

4. Processes I/O redirection, pipes and filters

5. Permissions.

6. Basic Shell Programming (scripting)

7. Introduction to Databases and Relational Algebra.

8. Theory of Normalization: Terms of integrity. Dependency diagrams. Minimum and a key concept. Update anomalies. Normal forms (3NF and BCNF)

9. Logical Database Design: Introduction to Relational Entity-Relationship Model. Definition and types of associations. Redundant associations. Transformation rules and logic model representation.

10. Introduction to the SQL language: language elements, data types. Environment databases.

11. Interactive SQL: Simple queries, expressions. Types of predicates, scalar functions and column. Queries on multiple tables. Queries with grouping rows. Creating tables. Insertion, modification and deletion of tuples. Permission management.

12. Embedded SQL: Programming with/without cursors. Implementing a relational design for access and manipulation DB's, through programs.

Textbook

- Abraham Silberschatz, Henry F. Korth, S. Sudarshan. Database System Concepts, Sixth Edition, McGraw-Hill Higher Education. 978-0073523323. 2010.
- Mark G. Sobell. A Practical Guide to Ubuntu Linux. 4th Edition. 978-0133927313. 2015

Grading

The final grade for this course is based on the following criteria:

- Lab reports 25%
- Active participation and Lab attitude and work 25%
- Two quizzes 50%