Databases and information systems

Finalità
The course offers an introduction to business Information Systems, both on fundamental and on technological aspects. Contents are mainly related to computer networks, distributed systems security and to the use and design of databases.

Programma
Part 1

HW/SW for computer systems

Types of computers systems. Main hardware components of computers. Key concepts and behavior of Operating Systems.

Computer networks and Internet

Introduction to Computer Networks. OSI model. Transmission media. LAN. IEEE 802 and Ethernet. Internetworking. Architecture of TCP/IP. Internet applications. Application level protocols. HTTP. Elements of HTML and XML. Security of distributed systems: key concepts. Symmetric and public-key cryptography. Digital signature. PGP. Secure Socket Layer. Firewalls.

Part 2

Databases

Introdution to Business Information Systems. The relational model.
Relational algebra. SQL query language. Scheme declaration. Simple and complex queries. Privilege.managements Constraints, procedures and active rules.
Database design. The Entità-Relationship model. ISA hierarchies. Design strategies and restructuring of schemes. Logical relational design. Access structures in DBMS and the cost of data access.
Transational systems and concurrency control. Data analysis.
Web access to databases.
The CGI protocol . Technologies for the integration between databases and Web.
E-business technologies.

Attività d'esercitazione
Exercises in the "Gestionale Lab" on LAN equipment and TCP/IP software and network applications.
Exercises on HTML/XML. Introduction to Access. Exercises on Access: table creation and SQL queries.

Modalità d'esame
Midterm written test on the first part of the course (HW/SW, networks and security).
Final written exam on the design (E-R) and use (SQL) of a relational database

Testi consigliati
P.Atzeni, S.Ceri, S. Paraboschi, R. Torlone, Basi di Dati - Modelli e linguaggi di interrogazione, McGraw Hill,2002. (ISBN 88-386-6008-5)
S. Gai, P. Nicoletti, "Reti Locali: dal cablaggio all'internetworking", SSGRR (Scuola Superiore G. Reiss Romoli) Editore, L'Aquila, 1994.
G. Bracchi, C. Francalanci,G. Motta, "Sistemi Informativi e aziende in rete", McGraw Hill,2002. (ISBN 88-386-0884-9)