UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Informatica Generale e Laboratorio Informatico

2425-2-E1803M102

Learning objectives

The course aims to provide students with a general understanding of the issues related to technological innovation in financial companies and society, data and information management, the Internet, digital business models, business information systems and their organizational and management implications. It also aims to teach students to apply their newly acquired knowledge in business, formulating interpretations and independent judgments.

At the end of the course, students will:
• know and understand the main trends in the digital world and their impact on companies and society;
• appreciate the relevance of digital tools for business activities and processes, with particular regard to marketing and communication;
• apply the knowledge acquired during the course according to a professional approach aimed at designing new business models that enhance people, processes and technological infrastructures in a synergic and systemic perspective;
• interpret and make independent judgments, also regarding IT security, ethical and social issues generated by the use of technologies;
• acquire a technical language that enables effective communication with both people with advanced technical and IT skills and with end-users;
• develop good learning skills that will allow students to undertake more advanced studies related to company information systems with greater autonomy.

Contents

The course "Informatica Generale e Laboratorio informatico" aims to provide students with a general understanding of the issues related to technological innovation in financial companies and society, data and information management, the Internet, digital business models, business information systems and their organizational and management implications.

Detailed program

Introduction to the role of technologies in the business world as a fundamental component for successful organizations.

New digital trends: digital transformation processes in companies and technological evolution in the information society.

Ethical and social aspects of the digital economy: ethical issues generated by the use of technologies and fundamental principles of computer security.

From data to knowledge: systems for data organization and management, for the research and processing of information to support decision-making activities, with particular emphasis on the management of Big Data and Data Analytics activities.

Digital markets and platforms: Internet, e-business, corporate networks and business change.

New media and digital marketing: strategies and tools for online communication and promotion, customer experience.

New digital skills: evolution of skills in companies as a result of recent technological transformations and development of new professional figures in the digital environment.

Introduction to corporate information systems: outline of corporate architectures supporting the operational, tactical and strategic needs of companies.

Prerequisites

The mathematical and logical knowledge acquired in high school.

Teaching methods

Informatica Generale - 42 hours

- 17 lessons of 2 hours each conducted in an in-person lecture format;
- 4 laboratory activities (on SQL language) of 2 hours each conducted in an interactive in-person format.

Laboratorio Informatico (Excel) - 12 hours

- 6 laboratory activities of 2 hours each conducted in an interactive in-person format.

Assessment methods

The assessment of learning includes a written test and, optionally, an additional oral examination. The written test,

which includes multiple-choice questions and open-ended questions, will take place in the teaching labs (laboratori didattici) in order to evaluate the student's skills in using the SQL language to solve specific problems related to accessing relational databases and the Microsoft Excel application to solve simple computational problems.

The final exam consists of two sections.

Computer Science Section:

- 16 multiple-choice questions (1 correct answer out of 4), each worth 1 point (0 points for incorrect or missing answers). These questions will be randomly selected from a predefined list. Specifically, there will be three types of questions: 1) Data Science and Computer Science theory, 2) Python theory, 3) Python code interpretation (where a small code snippet is provided, and the output is requested).
- 1 open question worth a maximum of 8 points (0 points for a substantially or mostly incomplete response). The exercise requires writing a code snippet to perform a specific task (e.g., iterating over a list and removing all even numbers, finding the minimum in a numeric list).
- 1 SQL query worth a maximum of 8 points (0 points for a substantially or mostly incomplete response; please note that the query must be executable). The exercise (similar to the one presented in the "SQL Exercises - Example SQL question in the final exam" section) will present a database consisting of several tables and will require formulating a specific query (usually involving multiple tables).

This section awards the maximum achievable score in the exam.

Computer Lab Section (Excel):

- 3 additional multiple-choice questions (1 correct answer out of 4) on the contents of the Computer Lab (answering these questions requires the use of Excel). The questions will cover both theory and practice.

Errors or omissions in the Computer Lab section result in the following penalties applied to the score obtained in the General Computer Science section:

- 3 correct answers: no penalty
- 1 incorrect or missing answer: -1 point
- 2 incorrect or missing answers: -3 points
- 3 incorrect or missing answers: -5 points

The additional 3 questions do not need to be answered by: (1) students who have already completed the "Abilità Informatiche Preparazione Tesi" module, and (2) previous academic year students who have already passed the Computer Lab module.

The final grade is determined by the Computer Science section score minus any penalties from the Computer Lab section (e.g., 27 points in the General Computer Science section, -3 points in the Computer Lab section - i.e., 2 incorrect or missing answers - resulting in a total score of 24/30).

Textbooks and Reading Materials

- Joseph, Valacich, Andrea Carignani, Schneider Christoph, Vanessa Gemmo, and Federico Rajola. Sistemi informativi e trend digitali. Pearson Italia, 2019.
- The slides used in the classroom and other study materials available on e-Learning platform.

Semester

First semester.

Teaching language

Italian.

Sustainable Development Goals

INDUSTRY, INNOVATION AND INFRASTRUCTURE