



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Informatica Generale e Laboratorio Informatico - 2

2223-2-E1803M102-T2

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#### Learning objectives

The course will provide students the ability to understand and utilize digital technologies for operational and strategic management. It will focus specifically on data science techniques to support business processes and decision-making.

The course can be taken as an alternative to the 'Informatica Generale e Laboratorio Informatico – 1', which focuses instead on providing 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 organisational and management implications.

The students will acquire the following skills:

- a practical understanding of data science techniques for extracting, managing, processing, and representing data;
- the ability to understand, compare, and utilize different solutions for business analytics, machine learning, and data mining;
- an understanding of recent technological trends and their impact on business practices;
- the ability to 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;
- a technical language that enables effective communication with both people with advanced technical and IT skills and with end users;
- good learning skills that will allow students to undertake more advanced studies related to company information systems with greater autonomy.

#### Contents

The course aims to provide students with a general understanding of the issues related to technological innovation in financial companies and data science techniques for supporting business processes and decision-making.

## **Detailed program**

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

*Information systems*: architectures and applications for business.

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

*Algorithms and software development*.

*Managing and analysing data*: relational databases, data warehouse, knowledge graphs, SQL, business analytics.

*Machine Learning e Data Mining*: supervised and unsupervised solutions, with a specific focus on neural networks.

*Fundamental principles of Natural Language Processing*: topic modelling, word embeddings, named entity linking, named entity recognition, and sentiment analysis.

*Computer security*: fundamental principles and prevention.

## **Prerequisites**

Final assessment is subject to previous registration of Statistica I.

## **Teaching methods**

Lectures with examples and case studies developed in the classroom and laboratories.

## **Assessment methods**

The exam consists of a written test that includes open-ended and multiple-choice questions. Optionally, an oral integration may be required.

## **Textbooks and Reading Materials**

Slides and video recording of the lessons.

Recommended books:

- J. Valacich-C. Schneider-A. Carignani-F. Rajola-V. Gemmo, Sistemi Informativi e Trend Digitali, Pearson Italia, 2019.
- Pensare in Python. Come pensare da Informatico. Seconda Edizione, Versione 2.2.23. Allen Downey. Green Tea Press.
- Andrea De Mauro, Big Data Analytics. Analizzare e interpretare dati con il machine learning, Apogeo, 2019.

## **Semester**

First semester.

## **Teaching language**

Italian.

## **Sustainable Development Goals**

INDUSTRY, INNOVATION AND INFRASTRUCTURE

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