UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# Information System

**2526-3-E4102B065**

## Learning objectives

The course aims to create the necessary knowledge, from a technical and methodological point of view, to enable a correct approach to the design of an information system, as an essential strategic resource for achieving the objectives of a business organisation.

*Knowledge and comprehension skills*
This teaching enables students to acquire a solid foundation in the theory of information systems and techniques of knowledge management and data analysis to be used in the biostatistical/demographic work context.
This teaching will provide knowledge and understanding in relation to:

- Design of information systems for data analysis and decision support,
- Identification of data sources in a business information system,
- Management of structured and unstructured data.

*Applied knowledge and understanding*
Students participate in practical exercises with data analysis software, on cases to be studied individually or in groups using web technologies, aimed at the production of documents for evaluation.
In addition, the course enables students to learn how to use text analytics software on real data. Through the development of group projects, students will learn how to retrieve data, clean and analyse them and then present the results.
In detail, students will learn to:

- Use software for analysing structured and unstructured data,
- Use software for data visualisation,
- Interpret the results of data analysis for decision support.

*Autonomy of judgement*
Through data analysis, students are called upon to make judgements and evaluate corporate communication, CRM or web-based marketing strategies. Classroom discussions and lecturer feedback on projects support the

development of the ability to independently evaluate business cases.

*Communication skills*
Students have to present group projects orally in front of colleagues and lecturers, developing clear, concise and effective communication skills. During interactive lectures and case discussions, active participation and discussion is encouraged.

## Contents

- Application architectures and technological architectures of information systems
- Digital applications and analysis of information system
- Design of information system for data analysis and decision support system
- Information systems and social media
- Introduction to Social Media Analytics
- Big Data and techniques for processing unstructured data
- Text Mining and Text Analytics

## Detailed program

Application architectures and technological architectures of information systems:

- Database management processes
- Distributed architectures, client server, network, Internet and World Wide Web
  Digital applications and analysis of information system:
- The application portfolio in the industrial and service companies
- CRM
  Design of information system for data analysis and decision support system:
- Design of processes and data modelling
- BPR
- Activities and information analysis
  Information systems and social media:
- Evolution of enterprise information systems
- Social Media Marketing
  Introduction to Social Media Analytics:
- Sentiment Analysis
  Big Data and techniques for processing unstructured data:
- Text Mining and Text Analytics

## Prerequisites

Fairly good skills in learning, writing and speaking are expected, together with a general knowledge about the main technologies and applications of Computer Science. Knowledge of the Office package.

## Teaching methods

The course is delivered in Italian and includes classroom lectures and laboratory exercises.
The lectures cover 6 CFU of the course, the exercises cover the remaining 3 CFU.
In the lectures, the theoretical topics inherent to the course are illustrated (delivery mode), and students are assigned project work to carry out in groups and discuss by the end of the course (interactive mode).
The laboratory exercises are aimed at teaching and using techniques for processing unstructured data, Natural Language Processing, in particular to perform Text Mining operations on data downloaded from various web sources.
Also during the exercises, project work is assigned to the students to be carried out in groups and discussed by the end of the exercises.

In detail:

- 42 classroom hours in the first semester (6 CFU)
    - of which 30 in lecture mode and 12 in interactive mode, with presentation and discussion of group work
- 24 hours of face-to-face tutorials in the second semester (3 CFU), with the use of languages and software for processing unstructured data.

## Assessment methods

The verification method is based on a written test.

The written test takes place at the computer and it consists of 3 open (short essays) and 10 closed questions with multiple answers (TRUE/FALSE). Open questions aim to evaluate the reasoning and critical discussion skills of a topic. The closed questions aim to evaluate the preparation on all the topics of the course. Open questions have a greater weight in the calculation of the final grade.

The evaluation is focused on the student's ability to answer to specific questions by referring both to the theoretical and practical aspects (through examples) connected to the requested topic.

The test is common for both attending students and non-attending students.
There are no intermediate tests.
During the course, students are invited to carry out a project in a group, it is not mandatory, whoever completes it will have a few more points in the exam. Non-attending students can freely choose whether to carry out the project.

## Textbooks and Reading Materials

1. G. Bracchi, C. Francalanci, G. Motta. Sistemi informativi d’impresa. McGraw-Hill, 2010.
2. V. Cosenza, "Social media ROI", Apogeo, 2012, ebook available on internet, chapters: 1, 2, 4, 5 (the basic concepts).
   Further material (slides and papers on specific topics) is available on the elearning page of the course.

## Semester

The course is delivered in the second cycle of the first semester and in the first cycle of the second semester.

## Teaching language

Italian

## Sustainable Development Goals

INDUSTRY, INNOVATION AND INFRASTRUCTURE