



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Elements of Computer Science

2021-1-F9201P201

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#### Aims

The first aim is to provide students with the basic understandings regarding the representation, processing, transmission and communication of digital information using a computer or a network of computers. The second aim is to teach students, thanks to theoretical lessons and practical exercises, the rudiments of computer programming in the domain of web applications.

#### Contents

The teaching consists of two main parts. A first part, mainly theoretical, which deals with the fundamental concepts of: digital representation of information in computers, information systems and systems for knowledge management, computer architecture, operating systems, computer networks and internet of things.

A second part, practical-theoretical, which introduces web applications and programming languages for web. This part will be accompanied by an intense exercise activity.

#### Detailed program

Digital representation of information: definition of information, digital representation of numbers, audio, images, video and characters, knowledge representation in a computer.

Information processing systems: the computer machine, types of computers, operating systems.

Computer networks and internet: computer networks basics, main types of networks, transmission media and main network devices, distributed multimedia applications.

Computer programming: definition of algorithm, programming language paradigms, programs, data types, basic data structures and programming constructs.

Examples of programming in web applications using the JavaScript language.

## **Prerequisites**

No one

## **Teaching form**

Lectures and assisted exercises (at labs when students' personal PC are not available)

During the Covid-19 emergency period, the method of teaching delivery is changed. Lessons, exercises, and laboratory sessions will be mostly delivered remotely with video recordings and with live videoconferencing events.

## **Textbook and teaching resource**

Informatica per le arti visive, la musica e lo spettacolo

(Massimo De Santo, Francesco Colace, Paolo Napoletano) Italy, McGraw-Hill Company, 2012.

Laboratori di Programmazione Web

(Marco Avvenuti e Mario G.C.A. Cimino) Italy, McGraw-Hill Company, 2012.

JavaScript: A Beninner's Guide, Fourth Edition

(John Pollock) McGraw-Hill Company, 2013.

Handouts provided by the teachers

(alternative textbooks will be suggested to students not speaking Italian)

## **Semester**

First semester

## **Assessment method**

Written with open and closed questions and exercises to evaluate acquired competences

## **Office hours**

Monday at 2 pm

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