UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Computer Science - 1

2021-2-E3301M194-E3301M198M-T1

Learning objectives

The course aim is to introduce the basic concepts of computer science, the structure and evolution of the automation systems and their main application areas.

Contents

Introduction to Computer Science, machine architecture, introduction to Algorithms, data base and SQL.

Detailed program

1. Introduction to Computer Science
2. Machine architecture
    - Von Neumann architecture
        - Central Processing Unit (CPU)
        - Computer data storage
        - Input and output devices
    - Modern computer architectures
3. Introduction to Algorithms
    - Variables and data types

    - Flow control: sequence, selection, iteration

4. Python programming language
    - Program structure
    - Primitive data type.
    - Variables and assignment.
    - Arithmetic, relational and logic expressions.
    - Conditional instructions
    - Iterative instructions
    - string, list, and text file.
    - Function: declaration, definition and parameters.
    - Program execution
5. Data Base and SQL language.
    - Relational model
    - SQL DDL and DML instructions
6. Operating System
7. Computer networks

Prerequisites

Mathematical-logical knowledge as acquired during high-school. Statistica

Teaching methods

Frontal lessons. Lessons take place in computer science lab to allow students to immediately apply the concepts explained.

During the Covid-19 emergency period, lessons will take place in synchronous videoconference.

Assessment methods

Learning assessment includes a written exam and, if the student gets a passing grade, an oral exam. The written exam will take place in the teaching laboratories to evaluate the student's skills in using software development kit and their competence in solving simple problems.

In the Covid-19 emergency period, exams will only be online. They will be carried out using the WebEx platform and esamionline platform.

Textbooks and Reading Materials

- For 1, 2, 4 and 5 use the didactic material that can be downloaded from the course web page
- For 2: **Think Python First Edition, by Allen B. Downey** (disponibile online) or **A. Lorenzi, E. Cavalli, V. Moriggia. Linguaggio Python. Atlas**
- For 3: **A. Lorenzi, D. Rossi. Le basi di dati. Il linguaggio SQL. Atlas**

Semester

Second semester.

Teaching language

Italian