



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Programmazione 1

1920-1-E3101Q105

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#### Aims

To learn the basics of imperative programming in Java

#### Contents

The course will introduce concepts which are the basis of high level programming languages, with a deeper focus on the imperative paradigm. The Java language will be used, and students will come to code simple algorithms

#### Detailed program

1. Logical structure of a computer and data representations. Classes of programming languages, compilers vs. interpreters. Concepts of program correctness (syntax, semantics). The Java Virtual Machine. Algorithms and programs
2. Primitive data types. Variables, declarations and assignments. Expressions and their evaluation. Type checking
3. Strings. Input/Output via keyboard/screen (the 'Scanner' class)
4. Control structures: sequence, selection, iteration. Arrays with primitive types
5. Simplified application of logic development of a program
6. Class methods, definition and invocation. Primitive type parameters. Dot notation. Activation records. Class variables and constants
7. Classes and instances as data structures, class fields. References: memory management in Java (heap, stack, and program execution). Arrays of references. Class methods with complex type parameters: definition and invocation. Passing parameters by value and by reference

## Prerequisites

Mathematical-logical knowledge as acquired during high-school

## Teaching form

The course comprises usual lectures, exercises in the classroom, and assisted sessions in the laboratory. Moreover, slides and exercises will be made available online.

The course is taught in Italian.

## Textbook and teaching resource

Textbook (the English version is also available):

- Walter Savitch - Programmazione con Java - Seconda Edizione, 2013, Pearson Education Italia, ISBN 9788871929613

Lecture notes written by the teachers.

## Semester

First semester, Academic Year 2019-2020

## Assessment method

Learning assessment includes a written exam and possibly an oral exam.

The written exam consists of:

- 10 multiple-choice questions, whose aim is to test student's knowledge of various parts of the program;
- some programming exercises developed on a computer using the Java programming language. In this case, the aim is to verify that the student is able to apply the programming techniques which have been presented during the course, and to implement such techniques in the Java programming language.

Each of the two parts will result in a score out of thirty and the final mark of the written part will be the average of the two partial scores.

The written exam can be substituted by two intermediate tests, each performed on some of the subjects covered during the course. They are organized and evaluated in the same way as the written exam.

During the oral exam, besides discussing the contents of the written exam, some questions may be posed on the subjects of the course.

## **Office hours**

On appointment

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