



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Metodi del Calcolo Scientifico

2425-1-F1801Q128

---

#### Aims

The aim of the course is to present in a rigorous way some fundamental numerical algorithms for mathematical modeling and to learn how to find and use scientific software libraries for the solution of concrete problems.

#### Contents

Floating-Point Arithmetic.

Numerical linear algebra: solution of large sparse linear systems, eigenvalue problem.

Google search algorithm.

Continuous and discrete Fourier Analysis.

#### Detailed program

1. Mathematical modeling
2. Floating-Point Arithmetic
3. Numerical linear algebra
4. Google search algorithm.
5. Fourier Analysis
6. Discrete Cosine Transform (DCT)
7. JPEG file format for compressed images
8. Fast Fourier Transform (FFT) (outline)

## **Prerequisites**

Math courses of the Bachelor in Computer Science.

## **Teaching form**

The activities are: 32 hours of frontal lectures in erogative mode and 20 hours of exercise classes in interactive mode.

## **Textbook and teaching resource**

Teacher's notes available on the web page of the course.

## **Semester**

??? Semester.

## **Assessment method**

During the course the teacher will assign two (or more) projects, to be retuned 3 days before the final exam. The final exam consists in the presentation of the projects and a discussion.

## **Office hours**

Email appointment.

## **Sustainable Development Goals**

---