



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Matematica per la Finanza - 2

2223-2-E1803M051-T2

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#### Learning area

#### Learning objectives

The aim of the course is to give the main tools for the basics of mathematical finance.

#### Contents

Sequences and series, integrals, linear algebra and programming, choice under uncertainty, basic notions on financial mathematics and on derivatives

#### Detailed program

- 1) Sequences and series: definitions and analysis of the character of series by means of the main criteria.
- 2) Integrals: definitions, main results and computation.
- 3) Linear algebra: matrices, vectors and linear systems.
- 4) Linear programming.
- 5) Financial mathematics.

6) Bonds and immunization.

7) Introduction to derivatives: binomial model and Black-Scholes model.

## **Prerequisites**

Functions in one and more variables, basic notions of Probability and Statistics.

## **Teaching methods**

Lectures will be in presence or on line, following the guidelines of the University.

## **Assessment methods**

The final exam is composed by a written part (divided in open questions and exercises) and an optional oral part. The final mark takes into account the scores of the parte above.

## **Textbooks and Reading Materials**

- "Successioni, serie e integrali", Manuale modulare di Metodi Matematici, vol. 5, a cura di Giovanna Carcano, edizioni Giappichelli Torino
- "Algebra lineare", Manuale modulare di Metodi Matematici, vol. 4, a cura di Maria Ida Bertocchi, edizioni Giappichelli Torino
- "Elementi di Matematica Finanziaria e cenni di Programmazione Lineare", S. Stefani, A. Torriero e G. Zambruno, edizioni Giappichelli Torino
- "Matematica Finanziaria classica e moderna", F. Cacciafesta, edizioni Giappichelli Torino
- "Opzioni e futures", J. Hull

## **Sustainable Development Goals**

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