UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# Financial Mathematics - 2

**2425-2-E3303M015-E3303M016M-T2**

## Learning objectives

Aim of this course is to provide mathematical tools useful to applications in economics and finace. Students should be able to define and then solve the proposed mathematical models.

## Contents

Linear algebra. Financial Mathematics.

## Detailed program

Linear algebra: vector spaces; linear dependence and independence; matrices; determinant; inverse matrix; rank; linear systems and their resolution; eigenvalues and eigenvectors.

Financial Mathematics: Principles of financial calculus. Simple and compound interest, trade discount. Present and future values. Annuities and perpetuities. Amortization plans. Financial flows analysis: DCF. Investment appraisal. Bond pricing. Yields. Duration. Term structure of interest rates. Forward rates.

## Prerequisites

Calculus

## Teaching methods

Teaching consists of lectures, exercises and tutoring in preparation for the final assestment.

In particular, some of the lectures will be provided remotely (at most 30% of the hours). The teacher will communicate in advance which of the lessons will be provided remotely.

Lectures and tutorials will be partly in the form of lecture delivery. Thirty per cent of the total number of hours delivered (lectures and tutorials) will take place in the form of interactive teaching (in-progress verification of understanding of the topics covered and proposal of interactive exercises).

## Assessment methods

Written exam on all the topics of the course including exercises and theoretical questions. Each question equally contributes to the final grade.

The written exam evaluates the knowledge of the mathematical formal language, the proficiency and the competences gained during the course.

There are no intermediate tests.

## Textbooks and Reading Materials

Scovenna Marina, Scaglianti Luciano, Torriero Anna, Manuale di Matematica - Metodi e applicazioni, Editore: Cedam, 2010

S. Stefani, A. Torriero, G. Zambruno, Elementi di matematica finanziaria e cenni di programmazione lineare, Giappichelli Editore, V

## Semester

First Term

## Teaching language

Italian

## Sustainable Development Goals

QUALITY EDUCATION