



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Fondamenti di Finanza Quantitativa

1920-3-E3301M160

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#### Learning objectives

Upon completion of the course students will know the basic mathematical approaches to portfolio selection and assets pricing in discrete and continuous time.

#### Contents

Mathematical models for the valuation and management of bonds, equity and derivatives.

#### Detailed program

Bonds and immunization: Bonds features and valuation; Interest rate risk and duration: definition, properties and computation; Convexity; Immunization theorems.

Choice under uncertainty and portfolio theory: Axiomatic approach to the problem of choice under uncertainty; Expected utility, certainty equivalent, risk premium; Stochastic dominance of first and second order; Mean variance criterion; Markowitz Portfolio Model.

Derivatives: Valuation of forward and options; Binomial model; Black-Scholes formula.

#### Prerequisites

Metodi Matematici is a propaedeutic exam.

## Teaching methods

Frontal lessons

## Assessment methods

At the end of the course there will be a written exam and an additional oral exam (at teacher or student discretion)

The written exam consists of two parts:

- a. exercises (with open-ended questions) which allow the teachers to evaluate the student's ability to apply the theory in solving problems;
- b. theoretical questions where the student is asked to provide complete definitions, statements and proof of theorems, examples and motivations

The oral exam consists of theoretical questions.

## Textbooks and Reading Materials

- G. Scandolo. Matematica finanziaria. AMON 2013
- J. C. Hull. Opzioni, futures e altri derivati. Italian edition by E. Barone. Pearson (VI edition).

## Semester

First semester

## Teaching language

Italian

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