



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Financial Mathematics M

2223-2-F8204B024

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#### Learning objectives

The aim of the course is to introduce students to continuous time financial models and the necessary mathematical tools.

#### Contents

Continuous time stochastic processes and financial modeling

#### Detailed program

1. Probability essentials;
2. Finite variation processes;
3. Martingales;
4. Ito integral;
5. Ito's Lemma and exponential martingale;
6. Tanaka's formula and change of measure;
7. Black & Scholes;
8. Fundamental Theorem of Asset Pricing;
9. Stochastic volatility models.

#### Prerequisites

Probability, statistics and mathematical methods.

## **Teaching methods**

Lectures and classes

## **Assessment methods**

Written exam with exercises aiming at verifying the knowledge of the mathematical tools as well as of some simple financial models in continuous time.

## **Textbooks and Reading Materials**

S. Shreve, Stochastic Calculus for Finance, Springer, 2004.

Lecture Notes

## **Semester**

First semester

## **Teaching language**

Italian

## **Sustainable Development Goals**

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