



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Portfolio Theory

2021-1-F1601M051-F1601M055M

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#### Learning area

#### Learning objectives

The students should learn the mathematical tools to face several optimization problems in economics and finance.

#### Contents

Functions of several variables; constrained and unconstrained optimization; utility theory and portfolio selection.

#### Detailed program

Functions of several variables: domain, level set, partial and directional derivatives, convexity. Eigenvalues and eigenvectors. Quadratic forms. Linear programming. Non linear optimization: unconstrained and constrained via equalities or inequalities. Utility theory. Portfolio selection: efficient frontier with and without a riskless asset.

#### Prerequisites

Foundations of differential calculus and of matrix algebra

## **Teaching methods**

During the emergency due to Covid-19 lectures will be held in remote (registrations and videoconferences)

## **Assessment methods**

The examination is written with exercises and theoretical questions. The oral exam is optional. During the emergency due to Covid-19 the exams will be on the Webex platform.

## **Textbooks and Reading Materials**

Simon and Blume "Mathematics for Economists". Slides and additional references will be available in [elearning.unimib.it](http://elearning.unimib.it)

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