UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# Mathematics for Business

**2324-1-F7701M093-F7701M023M**

## Learning objectives

Aim of this course is to study the application of mathematical models to decision problems in business and industry. Learning objective is to enable students to use this knowledge in order to manage and solve problems.

## Contents

The course aims at studying some mathematical models, useful for formalizing and solving decisional and managerial problems in the business environment.

The first part the classical models of linear programming and integer programming are studied. Then these models are applied to solve typical management problems such as profit maximization or cost minimization. In the second part some optimization models on networks are studied.

## Detailed program

Decisional problems and mathematical models: an overview.

Basic of Linear Programming: graphical solution, duality, sensitivity analysis, simplex method.

Basic of Integer Programming; general solution, Branch and bound method.

Application of linear and integer programming to business problems.

Optimization on graphs, Graphs and digraphs, Trees and Applications, Eulerian and Hamiltonian problems,

Centrality measures.

Applications to business problems.

## Prerequisites

Basic mathematical knowledge acquired during the courses of any three-year degree in economics

## Teaching methods

Traditional lessons in the classroom.

## Assessment methods

The exam is in the written form and consists of:
A part made of closed questions for extensive testing of the exam program.
A part made of open questions on all topics covered in the course. The questions will cover theory and exercises, for extensive testing of the exam program.
A part of the exam consists of solving exercises and a decision problem solved using excel, for the purpose of establishing the disciplinary problem solving skills.

## Textbooks and Reading Materials

L. Bellenzier, R. Grassi, S. Stefani, A. Torriero, Metodi quantitativi per il management, Esculapio Editore, Bologna, 2012

## Semester

First Term

## Teaching language

Italian

## Sustainable Development Goals

QUALITY EDUCATION