UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Mathematics for Business Management

2425-1-F7701M132-F7701M132-2

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.

Network Optimization, Graphs, digraphs, trees. Minimum path problems, flow on networks. Greedy algorithms.

Centrality measures.

Applications to business problems.

Prerequisites

Basics maths from courses in any bachelor's degree in economics

Teaching methods

Lectures in presence, with tutoring sessions in preparation for the final exam.
Lectures will take place in the traditional form. A small part (approximately 10%) of the teaching will be interactive lessons (comprehension of the topics, interactive exercises).

Assessment methods

The written exam evaluates the knowledge of the mathematical formal language, the proficency and competencies gained during the course.
It consists of:
closed questions for extensive testing of the exam program.
open questions on all topics covered in the course. The questions will be theoretical, for extensive testing of the exam program and exercises.
A part of the exam consists of formulate a decision problem then solve it using excel, for the purpose of establishing the disciplinary problem solving skills.
There are no intermediate tests.

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