UNIVERSITÀ DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Mathematics For Business

2021-1-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.

Project Management

Prerequisites

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

Teaching methods

Traditional lessons in the classroom. During the emergency period due to the Covid-19 disease, lessons will be held remotely asynchronously. Some videoconferencing lessons will be planned. All lessons will be recorded and the registration will remain available on the e-learning page during the academic year.

Assessment methods

A written exam, composed in two parts: the first part characterized by multiple-choice questions. The second part consists of exercises and theoretical questions. Part of the exam consists of solving a decision problem using excel.

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