UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Mathematics

2324-1-F5602M001-F5602M001M

Learning objectives

The course is intended for students who wish to learn mathematical techniques suitable for economic analysis. The course aims at showing students how to apply a number of mathematical skills they require for a successful study of economics. A number of economic applications and models are presented.

Contents

Fundamental topics in mathematical economics

Detailed program

1 - Linear Algebra
1a) Vectors, Matrices and Systems of Linear Equation
1b) Determinants and the Inverse Matrices
1c) Vector spaces
1d) Eigenvalues and eigenvectors

2 - Quadratic forms

3 - Functions of several Variables
3a) Partial differentiation
3b) Concavity and Convexity
3c) Unconstrained and Constrained Optimization for Functions of several Variables: the method of Lagrange multipliers and the Kuhn-Tucker Conditions

3d) Comparative Statics
3e) The envelope theorem

4 - Difference Equations and Differential Equations
4a) Linear First Order Difference Equations
4b) Nonlinear First Order Difference Equations
4c) Systems of Difference Equations
4d) Introduction to Differential Equations

Prerequisites

Basic Real Analysis and Linear Algebra.

As a textbook, students might be willing to chosse: *Essential Mathematics for Economics Analysis* - 6th edition - Knut Sydsaeter, Peter Hammond, Arne Strom & Andrés Carvajal

Chapters to be reviewed are from the first to the ninth (Real Analysis), the twelfth and the thirteenth (Linear Algebra)

Teaching methods

In-class lectures

Assessment methods

A written exam covering lectures topics

Textbooks and Reading Materials

Lecture notes

a) Sydsæter, K., Hammond, P., Seierstad, A., & Strom, A. - Further mathematics for economic analysis - Pearson education - second edition -2008
b) Hoy M., Livernois J., McKenna C., Rees R., Stengos T. - Mathematics for Economics - The MIT Press - 2013

Semester

First semester

Teaching language

English

Sustainable Development Goals