UNIVERSITÀ DEGLI STUDI DI MILANO
FACOLTÀ DI SCIENZE AGRARIE E ALIMENTARI

Codice	Denominazione insegnamento	CFU	A.A.
K070D-	**Mathematics for economics**	**6**	**1**

Docente

Giovanni Naldi

Obiettivi formativi

The aim of the course is to provide basic mathematical methods for solving a wide range of applications in economics.
Main topics of the course are: Linear Algebra, Functions of Several Variables and Optimization Problems.

Competenze acquisite

Basic mathematical methods and tools required to read and understand contemporary literature and modelling in economics.

Sintesi del programma

The aim of the course is to provide mathematical methods for solving a wide range of real applications in economics.

The topics of the course are: Linear Algebra, Functions of Several Variables and Optimization Problems.

UNIVERSITÀ DEGLI STUDI DI MILANO
FACOLTÀ DI SCIENZE AGRARIE E ALIMENTARI

Codice	Denominazione insegnamento	CFU	A.A.
K070D-	**Mathematics for economics**	**6**	**1**

Docente
Giovanni Naldi

Programma
System of Linear equations: examples. General form, Matrix and Vector representation, basic techniques for solving linear system. Rank of matrix and Rouché-Capelli Theorem. Matrix algebra: basic operations, scalar and matrix multiplication. Transpose Matrix. Square Matrix. Determinant. Inverse Matrix. Special kind of matrices. Quadratic Form. Eigenvalues and Eigenvector.

Real vector spaces. Linear combination, dependence and linear independence. Basis and dimension in R^n. Algebra of vectors, inner product and Norm. Linear Transformation and Linear subspaces. Basic Calculus functions of one variable. Functions of several variables: graphs of functions of Two Variables, Level Curves. Special Kinds of functions: linear functions, quadratic functions. Domain, continuity and partial derivatives. Differentiability. Directional
derivatives. Gradients. Second order Derivatives. Hessian matrix. Concave and convex functions.

Optimization problems: Definition of local and global minimum/maximum. First and Second order conditions for unconstrained problems. Constrained optimization: equality constraints and Lagrange Multipliers. Inequality constraints and Kuhn–Tucker conditions. Linear programming (Basic)

UNIVERSITÀ DEGLI STUDI DI MILANO
FACOLTÀ DI SCIENZE AGRARIE E ALIMENTARI

Codice	Denominazione insegnamento	CFU	A.A.
K070D-	**Mathematics for economics**	**6**	**1**

Docente
Giovanni Naldi

Articolazione dei CFU

Lez. frontali	Esercitaz. in aula	Esercitaz. in lab.	Laboratorio	Seminari	Altro
5	1				

Prerequisiti
Basic Calculus: Functions of one variables and their properties. Continuity and differentiability. Single-variable optimization.
Integration. Matrix and vector algebra.

Propedeuticità
none

Materiale didattico
Readings: Simon, C.P. and Blume, L.E. (1994): “Mathematics for Economists”, Norton, W. W. & Company, Inc.

Modalità d'esame e altre informazioni
The exam is in English. The exam consists of a written test and a possible oral test . The oral part is compulsory if the score of the written exam is between 15 and 17.