



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Mathematics

1920-2-E4001N078

Aims

Provide the student with the basic principles of mathematical analysis and discrete probability, so that the quantitative behaviour of social and economic phenomena can be studied and interpreted. Develop logical and analytical skills to solve problems and exercises.

Contents

Combinatorics.
Functions. Limits. Derivatives. Study of functions.

Detailed program

Sets: subsets, operations and relations between sets.
Combinatorics: sequences with and without repetitions. Permutations. Combinations. Newton's binomial formula.
Functions: definition, graph, composite function and inverse function, monotonicity, convexity. Elementary functions: polynomials, exponentials, logarithms, their properties and graphs.
Limits. Calculus of limits. Comparison between infinite and infinitesimal functions and fundamental theorems.
Derivatives: definition, geometric meaning. Derivatives of elementary functions, calculus of derivatives: sum, product, reciprocal, quotient, derivative of the composite and inverse functions.
Functions and their graph: increasing and decreasing functions and relation with their derivatives.

Prerequisites

Elementary algebra. Analytical geometry: equations of line, circle, parabol. Intersections of plane figures. Exponential functions and logarithms. Inequalities.

Teaching form

Frontal theoretical lessons in the classroom in which we provide knowledge of definitions, theorems and relevant examples and classroom exercises in which we try to provide the necessary skills and abilities to use these notions in the resolution of exercises.

Textbook and teaching resource

Notes

Semester

First semester

Assessment method

Written exam consisting of two parts: the first with multiple-choice questions and the second with a function study and one or two exercises.

An oral supplement can be requested by the professor or by the student.

Office hours

By appointment
