



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Matematica Generale II - 2

1920-2-E1802M118-E1802M130M-T2

Learning objectives

To explain the following mathematical tools and teach how to use them in economic applications: : sequences, explicitly or implicitly defined, series (numeric and power series), integrals (ordinary and generalized Riemann integrals); vector spaces (in particular, Euclidean vector spaces), matrices and simultaneous linear equations.

Contents

Sequences, Series, Integration theory, Linear algebra.

Detailed program

Sequences. Series: character and sum of a series; series with nonnegative terms; series with alternating signs; convergence tests; absolute and non-absolute convergence.

Power series: Taylor/Mac Laurin power series expansions.

Integration theory: Riemann integral; indefinite integral, primitives; fundamental theorem of calculus; integration methods; generalized integral.

Linear algebra: Euclidean vector spaces; matrices and operations; determinant; inverse matrix; rank; simultaneous linear equations; Cramer rule; Rouché-Capelli theorem; solution procedure for simultaneous linear equations systems; applications to economics.

Prerequisites

Calculus I

Teaching methods

Frontal lessons and exercises.

Assessment methods

The exam consists of **a** written and **an oral exam** which are evaluated as follows:

- If the mark of the written test is less than 18, the exam has been failed and must be retaken;
- if the mark of the written test is greater than or equal to 18, it is possible to sustain the oral exam at the same exam event.

Textbooks and Reading Materials

- Allevi-Bertocchi-Birolini-Carcano-Moreni, *Manuale modulare di Metodi Matematici*, Giappichelli. Editore, seconda edizione, 2003-2004. Modulo 5: Successioni, serie, integrali.

For Linear Algebra:

- Marco Vignati, Annamaria Squillati. *Appunti di Algebra Lineare con esercizi svolti*, Datanova 1995.
- Allevi-Bertocchi-Birolini-Carcano-Moreni, *Manuale modulare di Metodi Matematici*, Giappichelli. Editore, seconda edizione, 2003-2004. Modulo 4: Algebra lineare.

For exercises:

- G. Carcano, *Matematica Generale. Successioni, serie, integrali. Test ed esercizi, con richiami teorici*, Datanova, Milano 2000.
- G. Carcano, *Algebra lineare. Test, esercizi e temi d'esame, svolgimenti e richiami teorici*, Datanova, Milano (2002).
- F. Brega, G. Messineo, *Esercizi di Matematica Generale. Successioni e serie –Integrali – Algebra Lineare*. Giappichelli, 2006.

For the arguments of the pre-session course:

- R. D'Ercole, *Matematica per i precorsi*, Pearson Education, 2007.

Semester

First semester

Teaching language

Italian
