UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Basic Mathematical Analysis II

2122-2-E3002Q002

Aims

The course aims at accomplishment of the topics treated and ability to solve problems and to apply the learned methods in different contexts.

Contents

Sequences and series. Linear algebra. Differential calculus in several variables. Curves and surfaces. Line integrals. Integral calculus in several variables.

Detailed program

1. Sequences and Series. Numerical sequences, numerical series, geometric series, convergence tests for series. Power series, Taylor and Maclaurin series.

2. Linear algebra. The linear spaces R2 and R3. Planes and lines in 3-space. Systems of linear equations. Matrices e determinants.

3. Differential calculus in several variables. Limits and continuity. Partial and directional derivatives, differentiable functions. Higher order derivatives. Extreme values and classification of critical points.

4. Curves in 3-space. Length of (smooth) curves, line integrals.

5. Integral calculus in several variables. Double integrals over rectangles and more general regions.

   Evaluation of double integrals by repeated one-dimensional integration. Triple integrals on rectangular boxes and on more general regions. Fubini-Tonelli theorem for triple integrals. Change of variables in multiple integrals: polar coordinates, cylindrical coordinates and spherical coordinates.

Prerequisites

First year math course.

Teaching form

Lessons (40 h - 5 CFU), exercise classes (36 h - 3 CFU).

The course is in italian

Textbook and teaching resource

Textbook:

• J. Stewart, Calcolo. Funzioni di più variabili, Apogeo.

Other books (ebook present in the library)

- V.Barutello, M.Conti, D.L.Ferrario, S.Terracini, G.Verzini, Analisi Matematica Volume 2, Zanichelli

Semester

Second year first semester

Assessment method

Written and oral examination (18-30/30).

The written test consists of some exercises questions concerning the course contents.

The oral examination consists of comments and questions on the errors of the written part. The oral examination can change the vote of the written part of 2/3 points.
The oral examination will be held on teacher or student request.

If there are few students registered to an exam, the two examinations could be reunited in a unique oral examination where the student should solve exercises similar to that of the written exam.

Office hours

By appointment scheduled through email: giovanni.ortenzi@unimib.it