

Mathematical Analysis

Bachelor in Computer Science, 1st Year



UNIVERSITATEA BABEŞ-BOLYAI
BABEŞ-BOLYAI TUDOMÁNYEGYETEM
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TRADITIO ET EXCELLENTIA

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Important!

Every week:

- ▶ Lecture
- ▶ Seminar
- ▶ Homework and extra questions (on Teams).

Evaluation:

- ▶ 50% final exam
- ▶ 30% midterm test, week 7 (to be confirmed)
- ▶ 10% homework
- ▶ 10% seminar activity
- ▶ 10% extra work.

We will use Teams, everybody must join. **Access code 23awpe7**

Syllabus

1. Mathematical analysis in \mathbb{R} (calculus in one variable)

- ▶ Real numbers
- ▶ Sequences
- ▶ Series of real numbers
- ▶ Functions: limits, continuity, differentiation
- ▶ Taylor series and power series
- ▶ Integration

2. Mathematical analysis in \mathbb{R}^n (multivariable calculus)

- ▶ The Euclidean space \mathbb{R}^n
- ▶ Functions of several variables. Limits and continuity
- ▶ Partial derivatives and differentiability
- ▶ Extremum points for functions of several variables
- ▶ Applications: optimization and gradient descent
- ▶ Multiple integrals