

Analysis

Syllabus, 2023-24 autumn semester

For students of informatics

1. Course data

Name of course:	Analysis
Course number:	BAI0172
Place and time of classes:	Tuesdays 12:00–13:30 (B.I.183) and 16:00–17:30 (B.II.247/a)
Lecturer:	Gábor Marcell Molnár, ✉ molnar.gabor@nye.hu
Office hours:	11:00-11:45 on wednesdays, office B. 241 (A corridor).

2. Requirements

Active participation in classes is mandatory. By rule, throughout the semester at most 3 absences are allowed from practical classes. Two in-class tests are taking place scheduled for week 6 and week 14. Based on these two tests a grade will be offered. In case of rejection (or failure) of the offered grade one may take an exam. The exams are based on all the topics covered in the semester.

The grade system for the course is the following:

Excellent (5):	86–100%
Good (4):	71–85%
Fair (3):	56–70%
Sufficient (2):	40–55%
Fail (1):	0–39%

3. Thematics

Axioms for real numbers, number sets, cardinality. The concept of function, inverse and composition of functions, image and inverse image of sets. Real functions, inequalities. Metric properties of real numbers, sequences of real numbers and its properties, calculus of limits. Absolute and conditional convergence of series, convergence tests, power series. Limit of a function at a point and continuity, properties of continuous functions on closed intervals. Derivative of functions of one variable, mean value theorems, analysis of graphs of functions, maxima and minima problems. L'Hospital rule, Taylor polynomials, value estimation. Primitive function, integration rules, integration by parts and by substitution. Riemann integral of functions of one variable, basic properties, Newton-Leibniz formula, improper integral, applications.

4. Recommended readings

1. Joel Hass, Christopher Heil, Maurice Weir: Thomas' Calculus
2. Walter Rudin: Principles of Mathematical Analysis
3. Charles C. Pugh: Real Mathematical Analysis

5. Other expectations

In every other regard, this syllabus is not covering, the Code of Studies and Examination of University of Nyíregyháza and Student Disciplinary and Compensation Rules shall apply. <https://english.nye.hu/en/node/44>

september 4, 2023.

Gábor Marcell Molnár