Mathematics II.

Course Information, Spring Semester 2025-26

For Engineering Students

I kindly ask everyone who is taking this course this semester to carefully read and save this course information for later study.

1. Course Details

Course Title (Code):	Mathematics II. (BAI0070)
Location, Time of Lectures:	D5 lecture hall, Tuesdays 10:00–11:30 and 12:00–13:30
Lecturer:	Gábor Marcell Molnár ✉ molnar.gabor@nye.hu
Office Hours:	Mondays 11:00-11:45, Office B241 (email me in advance)

2. Requirements

Attendance is mandatory for the practical classes. **Up to 3 absences are allowed for practical classes.** During the semester, there will be an opportunity to earn a offered grade as described below.
In the 7th and 14th weeks of the semester, tests for offered grades will take place during the practical class. **There is no opportunity for retaking or improving the tests for offered grades.** The offered grade is calculated as the arithmetic mean of the two exam scores in percentages.
Those who achieve a result different from unsatisfactory on the offered grade exam will receive a offered grade, which they must accept (or reject) in Neptun. The grading system applied during the offered grade exams and exams is as follows:

Excellent (5):	85 – 100%
Good (4):	70 – 85%
Satisfactory (3):	55 – 70%
Pass (2):	40 – 55%
Fail (1):	0 – 40%

Those who did not take the offered grade exam (for any reason), took it but failed, or did not accept the offered grade, must take the exam to fulfill the course requirements. Exam dates will be announced in Neptun no later than three weeks before the exam period begins. **There will be a total of three exam dates.** I ask everyone to plan their exams so that there will be no opportunity for grading outside the announced exam dates.

3. Topics

Properties of functions, limits of functions. Concepts of differentiation and derivative quotient. Basic derivatives. Rules of differentiation. Taylor series expansion of functions, Taylor, Mc-Laurin formulas. Function analysis. Indefinite integral. Basic integrals. Integration rules. Integration of rational functions. Applications of integration. Definite integral. Newton-Leibniz formula. Limit transition. Calculation of area, volume, arc length, centroid. Differential equations. First-order linear homogeneous and inhomogeneous equations. Second-order differential equations. Probability calculation. Basic principles of probability calculation. Conditional probability, total probability theorem, Bayes' theorem. Concept of random variable. Characteristics of discrete and continuous random variables (distribution, distribution function, density function, expected value, variance). Independence, covariance. Notable discrete and continuous distributions. Laws of large numbers. Basics of mathematical statistics, sample, average, variance, empirical distribution and density function. Hypothesis testing.

4. Recommended Literature

- Riley, Hobson, Bence: Mathematical Methods for Physics and Engineering
- Gilbert Strang: Calculus, course website
- Joel R. Hass, Christopher E. Heil, Maurice D. Weir, Przemyslaw Bogacki: Thomas' Calculus

5. Other Expectations

In all other respects not covered by this course information, the Study and Examination Regulations of Nyíregyháza University and the Code of Ethics of Nyíregyháza University are authoritative.

February 10, 2026.

Gábor Marcell Molnár