

Course requirements

Mathematics A2c

2019/20/2

Neptun id. : BMETE90AX17, [Credits: 6 (lecture 4 + practice 2), exam based]

Maximum allowed absence rate: 30%

Lecturers:

Part 1: Csima Géza(csgeza@math.bme.hu), **Part 2:** Rahele Mosleh(rmosleh028@gmail.com)

Faculty Signature: Midterm tests will be given:

Test	Week	Passing limit	Topics	Legal tools
# 1	6	30% separately by parts	<p><u>Part 1</u> Solving systems of linear equations: elementary row operations, Gaussian elimination. Homogeneous systems of linear equations. Arithmetic and rank of matrices. Determinant, Cramer's rule, inverse matrix,</p> <p><u>Part 2</u> Improper integrals. Infinite series: convergence, divergence, absolute convergence. Sequences and series of functions, convergence criteria, power series, Taylor series. Functions in several variables: continuity, differential and integral calculus, partial derivatives, Young's theorem.</p>	Formula sheet
# 2	12	30% separately by parts	<p><u>Part 1</u> Linear space, subspace, generating system, basis, orthogonal and orthonormal basis. Linear maps, linear transformations and their matrices. Linear transformations and systems of linear equations. Eigenvalues, eigenvectors, similarity, diagonalizability.</p> <p><u>Part 2</u> Local and global maxima / minima. Vector-vector functions, their derivatives, Jacobi matrix. Integrals: area and volume integrals. Laplacian transformation. Ordinary differential equations. Fourier series: expansion, odd and even functions.</p>	Formula sheet

To get the faculty signature each of the two midterm tests should be successful. You should reach at least 30 percents of the total points in both parts of the syllabus simultaneously.

Repeated Tests: both tests can be retaken at the end of the semester.

Signature Tests: finally to get the faculty signature there will be a Signature Test during the make up week in May. Those who fail here, can not get signature!

Grading system: at the end of the semester there will be written final exam (100 minutes). To be successful students are expected to reach at least 30% of the final exam. The final grade for the subject: 10% for each part of every midterm, 40% in total and 60% for final test..
0 - 39 failed; 40 - 54 passed; 55 - 69 satisfactory; 70 - 84 good; 85 – 100 excellent

Topics:

Part 1.: Solving systems of linear equations: elementary row operations, Gaussian elimination. Homogeneous systems of linear equations. Arithmetic and rank of matrices. Determinant, Cramer's rule, inverse matrix, Linear space, subspace, generating system, basis, orthogonal and orthonormal basis. Gram-Schmidt-method. Linear maps, linear transformations and their matrices. Linear transformations and systems of linear equations. Eigenvalues, eigenvectors, similarity, diagonalizability.

Part 2.: Improper integrals. Infinite series: convergence, divergence, absolute convergence. Sequences and series of functions, convergence criteria, power series, Taylor series. Fourier series: expansion, odd and even functions. Functions in several variables: continuity, differential and integral calculus, partial derivatives, Young's theorem. Local and global maxima / minima. Vector-vector functions, their derivatives, Jacobi matrix. Integrals: area and volume integrals. Laplacian transformation. Ordinary differential equations.

Textbooks: - Thomas: Calculus, 11th edition, (International Edition), Addison Wesley.
 - Howard Anton, Chris Rorres, Elementary Linear Algebra, 11th edition, WILEY.