Course requirements

Calculus-2 (2022/23/2)

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

Maximum allowed absence rate: 30%

Lecturers: Dr. A. Panahi (Panahi53@edu.bme.hu)   Mediya B. Mrakhan (mal-jammoor@edu.bme.hu)

Faculty Signature: Midterm tests will be given.

Midterm Tests: Test 1: 2023.04.03, Test 2: 2023.05.22 with passing limit of 40% to get the faculty signature where each test caries 25 points of the total mark.

Repeated Tests: Retake of Test 1: 2023.04.17, Retake of Test 2: 2023.05.30.

Retake subject to fee: Students who need to improve their midterm mark, must register in Neptun for the second retake which will be held on 2023.06.07. This is the last chance to get the faculty signature.

Grading system: At the end of the semester there will be a written final exam (90 minutes) for 50 points. To be successful students are expected to reach at least 40% (20 points) on the final exam. The final grade for the subject:

(0 - 39, failed); (40 – 54, passed); (55 – 64, satisfactory); (65 - 79, good); (80 – 100, excellent)

Topics:

Ordinary differential equations. Separable differential equations. First order linear differential equations. Changing variables. Slope field, isocline. Higher order linear differential equations. External and internal resonance.

Fibonacci sequence. Fibonacci-type sequences. Sum of a series. Geometric series, telescopic series, harmonic series. Arithmetic. Alternating series. Absolute and conditional convergence. Convergence tests: comparison, ratio, root and integral tests. Domain of convergence, sum of a function series, examples. Uniform and absolute convergence. Weierstrass' criterion. Sufficient condition for the continuity of the sum, for the term-by-term integrability and differentiability of the series. Radius of convergence. Cauchy-Hadamard formula. Taylor polynomial. Taylor series. Taylor expansion of common functions. Binomial series. The trigonometric system. Fourier series. Fourier transformation. (Definition, properties, examples.)

Functions of several variables, continuity, differential and integral calculus, partial derivatives, Young's theorem. Local and global maxima, minima. Double and triple integrals, area and volume by integrals.

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Textbooks: - Thomas: Calculus, 11th edition, (International Edition), Addison Wesley.