Mathematics EP2 (BMETE90AX34)

Lecturer: Dr. Peter Moson (www.math.bme.hu, +3614632690, +36309329626)

Prerequisites: Mathematics EP1.

Attendance:
Being absent for more than 30% of the classes will result in denial of the final grade.

Detailed program (planned):
Week 1. Separable, linear ordinary differential equations (ODE) of the first order. Integral curves.
Week 2. Orthogonal trajectories. One dimensional autonomous equation. ODEs of the 2nd order. Reduction to 1st order equations.
Week 3. Linear ordinary differential equations of the second order with constant coefficients.
Week 5. 2 dimensional linear systems with constant coefficients. Matrices. Eigenvalues, eigenvectors. Phase portraits in case of real eigenvalues.
Week 6. 2 dimensional linear systems with constant coefficients. Matrices. Eigenvalues, eigenvectors. Phase portraits in case of complex eigenvalues.
Week 6. Sample Test 1.
Week 7. Test 1.
Week 8. Functions of several variables. Partial derivatives. Tangent plane. Local extrema of functions of 2 real variables.
Week10. Double integral (Cartesian, polar coordinates).
Week 11. Functions of several real variables. Applications.
Week 12. Sample Test 2.
Week 13. Test 2.
Week 14. Retake 1. Retake 2.

(2 hours/2 credits)

Literature:
Thomas' Calculus by Thomas, G.B. et al. Several editions, e.g. Addison-Wesley, 2005. (ISBN0321185587)

Grading system:

There will be 2 mid-term tests. The mark will be calculated: 2*50% from the tests. The planned dates of the midterm tests: *Test 1.* March 27, 2024. 08:15. *Test 2.* May 15, 2024. 08:15. *Retakes* (for students whose sum of the midterm tests is less than *40%,), / Improvement* either Test 1, or Test 2: May 22, 2024. 8:15. One test can be repeated in the week right after the semester (for extra fee, registration in NEPTUN is necessary): May 28, 2024.
Final marks (sum of midterm tests): 0-39 fail (1), 40-54 pass (2), 55-69 satisfactory (3), 70-84 good (4), 85- (excellent (5).

Good Luck, Have a Nice Semester!