SZÉCHENYI EGYETEM
UNIVERSITY OF GYŐR

Tárgytematika / Course Description
Mathematics II for Economists

GKNB_MSTA013

Tárgyfelelős neve /
Teacher's name: Pestiné dr. Rácz Éva Veronika

Félév / Semester: 2024/25/2

Beszámolási forma /
Assesment: Vizsga

Tárgy heti óraszáma /
Teaching hours(week): 2/2/0

Tárgy féléves óraszáma /
Teaching hours(sem.): 0/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

Mathematics is essential for understanding economics, financial calculations and predictions. Mathematics 1 and 2 for Economists provide all the basic mathematical background economist students need for they technical courses. Mathematics 2 for Economists improves students' skills about application of derivation and integration of single variable functions. and introduces them to multivariate functions. This course also provides an introduction to linear algebra. Students learn to calculate with matrices, find the determinant and the inverse of a matrix and solve systems of linear equations. At the end of the second semester students will not only be able to calculate integrals of more complex functions, partial derivatives and gradients of bivariate functions, but apply these techniques to some practical problems such as curve sketching, calculation of volumes and representing and calculating market share transitions and determining equilibrium prices of linear systems.

TANTÁRGY TARTALMA / DESCRIPTION

Schedule

Week 1	Repetition of derivation and integration. (first semester)
Week 2	Concavity of functions and connections to the second derivative. Elasticity.
Week 3	Graph sketching with complete function analysis.
Week 4	Introduction to advanced integration technics, partial integral.
Week 5	Improper integrals.

Week 6	Introduction to multivariate functions. Partial derivative of bivariate functions.
Week 7	Gradient. Directional derivatives. *Test 1.*
Week 8	Finding and categorizing local extremal points of bivariate functions.
Week 9	The double integral of bivariate functions over a rectangle.
Week 10	Operations with n-dimensional vectors.
Week 11	Matrices and determinants. Matrix algebra.
Week 12	Solution of systems of linear equations by Gaussian elimination.
Week 13	The inverse of a matrix. *Test 2.*
Week 14	Summary and repetition. *Repetition test.*

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESMENT'S METHOD

Requirements and Assessment

Attendance of lectures and practicals are highly recommended and determines the final grade in 10%.

The *signature* is the prerequisite of participation in exams. For the signature, students are required to satisfy the following conditions:

- getting at least 12 points from the tests (First test (max. 12 points) + Second test (max. 12 points),

- or 6 points from the Repetition test (max. 12)

Those students, who got signature are allowed to take the exam during the exam period. Final mark will be given based on the result of this written test:

100-88 points: 5

87-75 points: 4

74- 63 points: 3

62-50 points: 2

0-49 points: 1.

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Primary course materials: Lesson notes and szelearning course page

Thomas Holey, Armin Wiedemann - Analysis and Linear Algebra_ An Introduction for Economists-Springer (2023)

Recommended reading(s): Selected chapters from:

Jacques Ian (2018): Mathematics for Economics and Business. Pearson. 9th ed.

Briggs et. al. (2013): Calculus for Scientists and Engineers. Pearson.

AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL