MATHEMATICS FOR ECONOMICS II
Department of Economics
UNIVERSIDAD CARLOS III DE MADRID

Topic 1: Matrices and linear systems

- Matrices, determinants, inverse matrix, minors and Rank of a matrix.

- Systems of linear equations: definitions and matricial form. Rouché-Frobenius Theorem. Resolution of linear systems: Methods of Gauss and Crámer.

- Eigenvalues and eigenvectors of a matrix. Matrix diagonalization. Orthogonal diagonalization of symmetric matrices.

- Quadratic forms. Classification and methods of classification.

Topic 2: Integral of functions of one variable

- Indefinite integral. Calculus of primitives.

- Defined integral: definition and properties. Integral and derivative: Fundamental Theorem of Calculus Barrows' Rule. Continuity and integration: Mean Value Theorem for integrals.

- Area and integral. Calculus of the area of bounded plane regions.

Topic 3: Improper integrals of one variable and series

- Improper integrals: convergence tests.

- Sequences and limits: convergence tests.

- Series and limits: convergence tests.

- Harmonic and geometric series.

Topic 4: Integral of functions of two variables

- Double integral on rectangles and on bounded sets.

- Iterated integrals. Fubini's Theorem.

- Theorem of the Change of Variable.

- Differentiation under the integral sign

ASSESSMENT SYSTEM
The final grade is the weighted average of the final exam and the class grade. The final exam is the same for all groups and consists of practical exercises and theoretical questions.

The continuous evaluation consists of the weighted sum of the grade obtained in class and the grade obtained in a final exam.

Weight of end-of-term-examination: 60%
Weight of continuous assessment: 40%

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