

MATHEMATICS II

Degree(s)	: Economics; Management
Type	: Compulsory course unit
Curricular year/semester	: 1st year / 2nd Semester
ECTS / hours per week	: 6 ECTS / 5.0 Hours
Workload per week	: 2Theoretical x 1.5 Hours + 1Practical x 2 Hours
Teacher responsible	: Professor João Paulo Vicente Janela

OBJECTIVES

Pursue the objectives of Mathematics I, i.e.:

- To provide a grounding in mathematical tools that are needed for economics.
- To develop rigor and ability to manipulate mathematical methods.
- To increase capacity for solving quantitative problems having applications in economics in view.

PROGRAM

- Complements of linear algebra: Eigenvalues and eigenvectors. Classification of quadratic forms.
- Functions of several variables: General concepts, domain, geometric representations. Topology in \mathbb{R}^n . Continuity, partial differentiation and differentiability. Inverse function and implicit function theorems. Free and constrained optimisation. Integration on rectangles and Fubini's theorem. Integration on arbitrary regions and change of coordinates.
- Differential equations: Generalities, existence and uniqueness results. First order equations (linear, separable, exact). Second and higher order equations (linear with constant coefficients).
- Difference equations: Generalities, linear equations with constant coefficients.

BIBLIOGRAPHY

Recommended Bibliography:

- K. Sydsaeter and P. Hammond, Essential Mathematics for Economic Analysis, Pearson Education Limited, 2008 (3rd Edition).