

MATHEMATICS I

Degree(s)	: Economics; Management
Type	: Compulsory course unit
Curricular year/semester	: 1st year - 1 st /2 nd Semester
ECTS / hours per week	: 6 ECTS / 5.0 Hours
Workload per week	: 2 Theoretical x 1.5 Hours + 1 Practical x 2 Hours
Teacher responsible	: Professor Fernando Manuel Rodrigues Ferreira Gonçalves Professor Filipa Carvalho

OBJECTIVES

- To provide students an opportunity to further develop their **deductive reasoning** skills.
- To enable students to acquire skills in the methods of **linear algebra and calculus**, as required for their use in both **economics- and finance-based units**.
- To prepare students for **further units in mathematics and related disciplines**.

PROGRAM

Linear algebra

- Vectors.
- Matrices.
- Determinants.
- Systems of linear equations.

Calculus

- The real number system.

- Sequences and infinite series.
- Functions of one real variable.

- Continuous functions.
- Differential calculus.
- Optimisation.
- Integration.

BIBLIOGRAPHY

Recommended Bibliography:

- Gonçalves, F. F., 2013: Introduction to Linear Algebra – Lecture Notes.
- Slougher, D., 2009: A Primer of Real Analysis.
<http://www.synechism.org/wp/a-primer-of-real-analysis/>

Optional Bibliography:

- Apostol, T., 1967: Calculus, Vol. 1: One-Variable Calculus, with an Introduction to Linear Algebra, 2nd ed., John Wiley, USA.
- Blyth, T. S., and E. F. Robertson, 1998: Basic Linear Algebra, Springer-Verlag, UK.
- Simmons, G. F., 1996: Calculus with Analytic Geometry, 2nd ed., McGraw-Hill, USA.