Mathématique générale : compléments d'analyse et algèbre linéaire

Lecturers
Luca Paolo Merlino (Coordinator), Bram DE ROCK and Thomas DEMUYNCK

Course mnemonic
MATH-S1012

ECTS credits
5 credits

Language(s) of instruction
French

Course period
Second term

Campus
Solbosch

Course content

This linear algebra course includes the concepts of

- real matrices (sum and product, trace, transpose, elementary matrices, invertibility of square matrices, rank of a matrix)
- linear systems (matricial form of linear systems, Cramer systems,....)
- determinants (properties, link between determinants and matrix invertibility, computation of the inverse with determinants)
- vector spaces (vector sub-spaces, linear dependence et independence, bases, change of basis, linear transformations, eigenvectors and eigenvalues, symmetric bilinear forms, scalar product, quadratic forms)
- complex numbers (sum and product, de Moivre's formula, roots of polynomials, nth roots of complex numbers)
- linear recurrence relations with constant coefficients (recurrences of order 1, recurrences of order n)

Objectives (and/or specific learning outcomes)

LG2. Academic mindset

LO 2.2 Display critical thinking, logical and abstract reasoning and develop an independent approach to learning

LG3. Quantitative skills

LO 3.1 Solve standard mathematical problems

LO 3.3 Assess the quality of the a quantitative analysis of an economic problem

Teaching method and learning activities

Theory: ex-cathedra course.

Notes for the theoretical part: slides that are projected (and commented!) during the course.

Exercises: students are divided into groups for exercise sessions.

Exercise booklet divided into 12 lessons, each of which starts by a short reminder of the corresponding theory followed by some solved exercises, plus some proposed exercises (final answers (at least) are provided).

Some solved exams from previous years are available on the "université virtuelle".

During the academic year, guidance sessions and assistance are organized.

References, bibliography and recommended reading

Cours de mathématiques pour économistes, 1989, Philippe Michel, Economica.

Mathématique pour économistes et gestionnaires, 2010, Louis Esch, 4e édition, ouvertures économiques, De Boeck Université.

Course notes

Podcast, Syllabus and Université virtuelle

Other information

Place(s) of teaching

Solbosch

Contact(s)

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Evaluation method(s)

written examination

Evaluation method(s) (additional information)

A written exam on the theory as well as the exercises takes place during the May/June exam session.

During the second exam session (August/September), a written exam of the same type as the one organized during the first exam session is organized.

Determination of the mark (including the weighting of partial marks)

100% written exam.

Main language(s) of evaluation

French

Programmes

Programmes proposing this course at the Solvay Brussels School of Economics and Management

BA-ECON | Bachelor in Economics : General | option Français/unit 1