

MATHEMATICS FOR BUSINESS I

1st G.A.D.E., Group A

Academic Year 2011/12

Lecturer: Belén Cobacho

Syllabus

BLOCK I. LINEAR ALGEBRA

Unit 1. Vector spaces. Linear maps

- 1.1. The vector space \mathbb{R}^n
- 1.2. Linear dependence and independence. Basis.
- 1.3. Vector subspaces.
- 1.4. Linear maps.
- 1.5. Matrix of a linear map.

Unit 2. Diagonal matrixes. Quadratic forms

- 2.1. Eigenvalues and eigenvectors. Characteristic polynomial.
- 2.2. Diagonal matrixes.
- 2.3. Quadratic forms.
- 2.4. Quadratic forms with constraints.

BLOCK II. MATHEMATICAL ANALYSIS

Unit 3. Derivative and its applications to Business

- 3.1. Scalar functions. Contour lines.
- 3.2. Partial derivatives. Differential.
- 3.3. Marginal functions and elasticity.
- 3.4. Marginal rate of substitution.
- 3.5. Homogeneous functions. Returns to scale.

OBJECTIVES

The purpose of this course is:

- To introduce basic mathematical concepts, methods and techniques that are frequently used in Business and Economic situations.
- To deal with mathematical tools the students need to use in some other courses in the Degree, and afterwards, when they finally become Business professionals.

GENERAL INFORMATION

Lecturer name: Belén Cobacho

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Office hours: T 14:00-16:00, W 14:00-16:00, Th 14:00-16:00. Ask the lecturer previously. Also other times by appointment.

TEXTBOOKS AND RESOURCES

Alcaraz, E., B. Hughes. Diccionario de términos económicos, financieros y comerciales. Ariel Economía. [Inglés-Español Spanish-English dictionary].

Hoy, M., J. Livernois, et al. Mathematics for Economics. Third Edition. The MIT Press, 2011. [General Maths, Linear Equations, Matrices, Vector Spaces, eigenvalues, quadratic forms, Derivatives, Differentiation].

Llorens Fuster, J.L. *Introducción al uso de DERIVE. Aplicaciones al Álgebra y el Cálculo.* Universidad Politécnica de Valencia, 1995. [Units 1 to 3. Exercises using DERIVE].

Sydsaeter, K. and P. Hammond. Essential Mathematics for Economic Analysis. Third Edition. Prentice Hall, 2008.

Dpto. Economía Aplicada - Universidad de Valladolid. *Guía de trabajo. Álgebra Lineal.* [Temas 1 y 2. Teoría y ejercicios]

http://www2.eco.uva.es/lmeneses/Guia_de_Trabajo/Pagina_inicio/master.htm

González Pareja A. y otros. *Aspectos básicos de Matemáticas para la Economía: Un texto virtual y abierto.* [Matemáticas básicas]

<http://eco-mat.ccee.uma.es/libro/libro.htm>

lasmatematicas.es. *Videos con contenidos de Matemáticas Básicas de Educación Secundaria.* <http://www.dmae.upct.es/~juan/matbas/matbas.htm>

Dictionaries: www.wordreference.com

Lessons, calculators, and worksheets created to assist students and teachers of algebra <http://algebrahelp.com/>

Algebra, Applied Mathematics, Calculus and Analysis, Probability and Statistics and others.

<http://mathworld.wolfram.com/>

Curiosities about Maths. <http://goldennumber.net/>

REQUIREMENTS AND ASSIGNMENTS

- Two partial exams
- Assignments to do during the lectures, individually and/or in groups
- Assignments to do out of the classroom, individually and/or in groups
- Attendance (not compulsory, but highly advisable so as not to miss the marks of some assignments)
- Final exam (including the usage of computer)

GRADING POLICY (February)

- Continuous assessment (partial exams and assignments): 40%
- Final exam without computer: 40%
- Final exam using computer: 20%

Those percentages vary in June and September exams, please see the detailed evaluation system.

At least 25% of the grading activities will be held in English. 10% extra is possible by attending a specific course in English (by the Languages Service), readings and seminars in English.

EXPECTATIONS AND RECOMMENDATIONS

- Attend class regularly
- Check the web page of the course regularly
- Do the assignments and turn them in on the due date
- Do your own work
- Work with your classmates
- Participate in the classroom and in the forum of the web
- Contact the instructor if you have questions
- Use the English language as much as possible
- Try to improve your English by attending to English lessons and using the resources provided