



Universitat de Lleida

DEGREE CURRICULUM **MATHEMATICS**

Academic year 2013-14

Subject's general information

Subject name	MATHEMATICS
Code	102601
Semester	1r Q Avaluació Continuada
Typology	Troncal
ECTS credits	6
Theoretical credits	0
Practical credits	0
Department	Matemàtica
Important information on data processing	Consult this link for more information.
Language	Catalan

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Subject's extra information

The course as part of the academic plan

The subject of mathematics is presented as a tool for developing and managing the activities of advisory degree in tourism as one of the objectives you. In this sense, the syllabus gives a basic elementary math, beginning a preliminary (item 1) in the other essential topics. In the chapter 2 explains linear programming as a tool for solving optimization problems, both common in the context of the administration. 3 The issue turns on the bypass, only giving some content to develop the basic theme is 4 on financial mathematics.

Competences

University of Lleida strategic competences

- Correctness in oral and written language.
- Master Information and Communication Technologies.
- Respect of the essential rights of equality between men and women, the promotion of Human Rights and of the values of a peace culture and democracy.
- Master a foreign language.

Degree-specific competences

- Apply instrumental techniques in the analysis and resolution of business problems and the making of decisions.

Degree-transversal competences

- Perform in accordance with rigor, personal commitment and quality orientation.
- Ability to organise and plan.
- Ability to analyse and synthesize.
- Team work and leadership.
- Be able to work and learn in an autonomous way and at the same time adequately interact with others through cooperation and collaboration.

Subject contents

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Subject 1: Preliminary

Number sets.

Polynomials.

First and second grade polynomial functions.

First and second degree inequalities with one variable.

Subject 2: Functions and graphs

Study of a function, general concepts: domain, range, graphs, increasement, decreasement and extremes.

Operations with functions: sum, product, sum of a scalar, a scalar product, quotient, composition and inverse function.

Polynomial functions.

Inverse proportionality function; introduction to the concept of a limit.

Vertical and horizontal asymptotes.

The exponential and logarithmic function.

Rational functions. Limit of a function in a point and infinite boundaries.

Other types of functions: absolute value and piecewise defined functions.

Transforming a function graph, interpretation.

Subject 3: Some features of economy

The functions of supply and demand.

Market balance.

The functions of income, costs and profits.

The average cost functions.

Subject 4: Derivative of a function. Applications

Variation rate of a function. Average variation rate and instantaneous rate.

Derivative of a function at a point. Interpretation. The derivative function. Derivative calculations.

Subject 5: Linear programming

Linear inequalities with two variables. Half-planes. Linear inequality systems with two variables. Linear program formulation. Objective function and restrictions. Feasible region of a linear program. Feasible region vertex and border. Interpretation of contour lines. Solving a two-variable linear programming problem with a graph.

Subject 6: Financial mathematics

Basic concepts: financial transaction, financial capital, financial regimes, etc.

The financial regime of simple interest arrears.

The financial regime of compound interest at a constant rate.

Nominal and effective interest. Equivalent effective rates. The AER.

Financial income. Valuation of income.

Loans and amortization tables.

Subject 7: Vectors and matrices

Scalar and vector magnitudes.

Vectors. Definition, examples, operations and properties.

Linear combination of vectors.

Matrices: definition, examples, operations and properties.

Methodology

Les sessions de teoria, tot i ser expositives, estaran enfocades a comprendre la utilització pràctica dels continguts.

En les sessions de grup mitjà els estudiants portaran a cap activitats d'aplicació dels continguts

Evaluation

- 1.- Es realitzarà un primer examen parcial eliminatori.
- 2.- En al data de l'examen final es farà un segon parcial i es podrà recuperar la nota del primer.
- 3.- Els estudiants entregaran un treball.

La qualificació es calcularà fent: $0.45 \cdot \text{primer parcial} + 0.45 \cdot \text{segon parcial} + 0.1 \cdot \text{nota treball}$

En determinades sessions els estudiants podran fer i entregar exercicis d'aplicació pràctica que podran contribuir a la nota dels parcials.

Bibliography

Notes and lists of problems

The Virtual Campus has some notes and a list of problems for each subject.

Basic bibliography:

- NAVARRO, E. i NAVE J.M. Fundamentos de Matemática Financiera. Antoni Boschñ. Editor
- ARYA y LANDER. Matemáticas aplicadas a la administración y la economía. Prentice Hall.
- HAEUSSLER E.F.; PAUL JR. i R.S. Matemáticas para administración y economía. Pearson, Prentice Hall.
- HOFFMAN, L.D. and BRADLEY Gerard L. Cálculo aplicado a administración, economía, contaduría y ciencias sociales. Mc.Graw-Hill.

Complementary bibliography:

- GRAFFE. Matemáticas para economistas. McGraw-Hill.
- CHIANG. Métodos Fundamentales de Economía Matemática. McGraw-Hill.
- LARSON i HOSTELER. Cálculo y Geometría Analítica. McGraw-Hill.
- CAMARA Ángeles i alt. Problemas resueltos de matemáticas para economía y empresa. Ed. Thomson.