IDENTIFYING DATA

Mathematics: Mathematics

Subject	Mathematics: Mathematics
Code	V06G270V01104
Study programme	Grado en Comercio

Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st

Teaching language	Spanish Galician
Department	
Coordinator	García Cutrín, Francisco Javier Alonso Álvarez, José Nicanor
Lecturers	Alonso Álvarez, José Nicanor García Cutrín, Francisco Javier
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General description	The Mathematics subject, in the Degree in Commerce, has as its primary function to provide students with the language, knowledge and basic mathematical techniques that they will need both in their training and in their professional career. It will also help develop logical thinking to solve problems, the ability to analyze data, the interpretation of results and the synthesis of conclusions. Participation, collaboration and the critical spirit will be encourage at all times. With this purpose, understanding and management of the concepts and fundamental techniques of linear algebra and calculus will be sought during the course; as well as its application to diverse areas of study.

Training and Learning Results

Code	
C21	CE21. To identify and solve model problems applied to economic situations through application of appropriate mathematical techniques, as well as to interpret the solutions provided by the model.
D3	CT3. Ability to learn and work independently, and work planning and organization skills.
D4	CT4. Analysis, synthesis and critical-thinking skills.
D5	CT5. Ability to apply the theoretical and practical knowledge acquired in the academic context, in particular to apply multidisciplinary knowledge and thinking.
D17	CT17. Attention to detail, precision, striving for continuous improvement.

Expected results from this subject

Expected results from this subject	Training and Learning Results	
Knowledge of the basic techniques of derivation of real functions of real variable and its application in the economic context	C21	D3 D4 D5 D17
Calculation of the eigenvalues of a matrix, determination of whether or not a matrix is diagonalizable and classification of quadratic forms regarding to its sign	C21	D3 D4 D5 D17
Application of the basics and rules of differential calculus of functions of several variables with the purpose of formulate and solve optimization problems.	C21	D3 D4 D5 D17
Discussing ideas both in writing and orally in a clear and rigorously way		D3 D4 D17

Contents

Topic	
Real function	Introduction. Elementary functions: Graphs and properties (domain, continuity, growth / convexity). Derivability. Economic interpretation. Higher order derivatives: Convexity. Optimization.
Matrix calculus	Matrices. Operations with matrices. Determinants Systems of linear equations. Eigenvalues. Diagonalization. Quadratic forms.
Functions of several variables	Introduction. Elementary functions. Graphs and properties (domain, continuity, convexity). Partial differentiation: Calculation and interpretation. Jacobian matrix. Chain rule. Derivatives of a higher order. Hessian matrix. Convexity and concavity. Optimization. Lagrange problems.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	27	26	53
Autonomous problem solving	0	25	25
Seminars	22	33	55
Essay questions exam	1	16	17

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Lecturing	Exposition by the faculty of the general lines of contents, theoretical and practical, on the subject; with the objective of facilitating students the acquisition of knowledge
Autonomous problem solving	Resolution of problems proposed during the lessons
Seminars	Participation of the students will be encourage in order to expose their difficulties, help to solve the questions raised by other students in class or solving exercises suggested by the professor

Personalized assistance

Methodologies	Description
Seminars	In the practical classes, all the doubts that the students might raised will be answered

Assessment

	Description	Qualification	Training and Learning Results	
Autonomous problem solving	Resolution/delivery of exercises proposed	30	C21	D3 D4 D5 D17
Seminars	The work done during practical classes will be valued	30	C21	D3 D4 D5 D17
Essay questions exam	These short essay questions will be part of the final test which will assess the student's acquisition of contents	40	C21	D3 D4 D5 D17

Other comments on the Evaluation

For continuous assessment grading, the following is necessary:

a) Obtaining a minimum score of 3 points (out of 10) in the final exam.

b) Regularly attending theoretical and practical classes.

For students who are not evaluated through continuous assessment, the grade will solely result from the final exam (100%).

Students may voluntarily withdraw from continuous assessment at any time, provided they have completed less than 50% of the continuous assessment activities, or at any other time with prior authorization from the faculty.

In the end-of-course examination, the exam will account for 100% of the grade.

Sources of information
Basic Bibliography

Besada, M.; García-Cutrín, J.; Mirás, M.; Vázquez, C., **Cálculo de varias variables: Cuestiones y ejercicios resueltos.**, 1ª Edición., Pearson Educación, 2001

Besada, M.; García-Cutrín, J.; Mirás, M.; Quinteiro, C.; Vázquez, C., **Un mar de matemáticas**, Servicio de Publicacións da Universidade de Vigo, 2016

Sysaeter, K.; Hammond, P.; Carvajal, A., **Matemáticas para el análisis económico**, 2ª Edición, Pearson, 2012

Complementary Bibliography

Recommendations