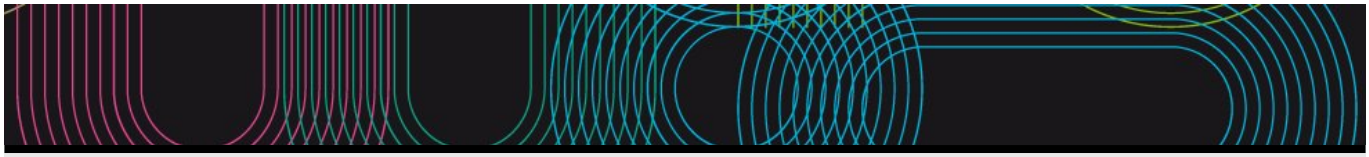

IDENTIFYING DATA				
Mathematics: Mathematics				
Subject	Mathematics: Mathematics			
Code	V06G270V01104			
Study programme	(*)Grao en Comercio			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	Spanish Galician			
Department				
Coordinator	García Cutrín, Francisco Javier Hervés Beloso, Carlos			
Lecturers	García Cutrín, Francisco Javier Hervés Beloso, Carlos Sanmartín Carbón, Esperanza			
E-mail	cherves@uvigo.es fjgarcia@uvigo.es			
Web	http://faitic.uvigo.es			
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.			

Competencies	
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.

Learning outcomes		
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	26	26	52
Autonomous problem solving	0	25	25
Seminars	22	33	55
Essay questions exam	2	16	18

*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	
Lecturing	Attendance and attitude during the lectures will be aseessed	10		D4 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	60	C21	D3 D4 D5 D17

Other comments on the Evaluation

There will be the possibility of voluntarily performing a partial test that will be considered for the final test.

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