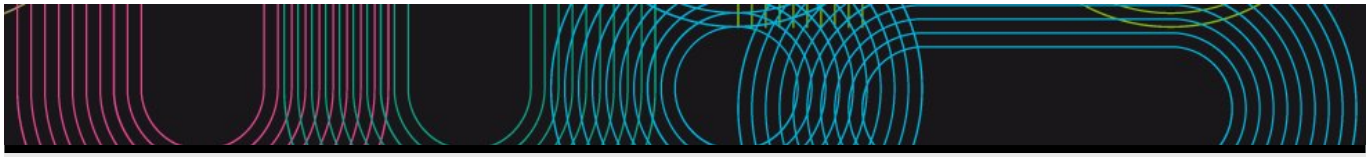

IDENTIFYING DATA				
Mathematics: Mathematics I				
Subject	Mathematics: Mathematics I			
Code	V10G061V01104			
Study programme	(*)Grao en Ciencias do Mar			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	Galician			
Department				
Coordinator	García Cutrín, Francisco Javier Besada Morais, Manuel			
Lecturers	Besada Morais, Manuel García Cutrín, Francisco Javier Vázquez Pampín, Carmen			
E-mail	fjgarcia@uvigo.es mbesada@uvigo.gal			
Web	http://faitic.uvigo.es			
General description	Mathematics I, in the degree of Grao in Sciences of the Sea, has as primary function to provide students with language, skills and basic mathematical techniques that will require both training and non-professional.			

Competencies	
Code	
A1	Students have demonstrated knowledge and understanding in a field of study that builds upon their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study
A2	Students can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study
A3	Students have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include reflection on relevant social, scientific or ethical issues
A4	Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences
A5	Students have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy
C1	know at a general level the fundamental principles of sciences: Mathematics, Physics, Chemistry, Biology and Geology.
C2	Acquire basic knowledge of mathematics (differential and integral calculation) and statistics.
D1	Develop the search, analysis and synthesis of information skills oriented to the identification and resolution of problems.
D2	Acquire the ability to learn autonomously, continuously and collaboratively, organizing and planning tasks over time.
D3	Understanding the meaning and application of the gender perspective in different fields of knowledge and in professional practice with the aim of achieving a more just and equal society.
D4	Ability to communicate orally and in writing in Galician language.
D5	Sustainability and environmental commitment. Equitable, responsible and efficient use of resources.

Learning outcomes			
Expected results from this subject	Training and Learning Results		
To use with ease techniques of calculation of eigenvalues of a square matrix and of determination of the sign of a quadratic form. Solve problems in which you need to apply the techniques above.	A1 A2 A3 A4 A5	C1 C2	D1 D2 D3 D4 D5

Understand some basic concepts of differential calculus: partial derivatives, continuously differentiable function, chain rule, implicitly defined function, end / optimum of scalar functions.	A1 A2 A3 A4 A5	C1 C2	D1 D2 D3 D4 D5
Use the mechanics of calculation of partial derivatives of any order, of application of the chain rule, derivation of implicitly defined functions, as well as the techniques of calculating optimal / extreme with and without equality constraints. Apply the previous techniques to solving optimization problems.	A1 A2 A3 A4 A5	C1 C2	D1 D2 D3 D4 D5
To know the primitives of elementary functions and the main techniques of calculation of these. Understand the mechanics of calculating double integrals.	A1 A2 A3 A4 A5	C1 C2	D1 D2 D3 D4 D5
Use the mechanics of calculating primitives and double integrals with simple functions. Know how to apply the integral calculation to the determination of areas, volumes, centers of gravity, moments of inertia, etc.	A1 A2 A3 A4 A5	C1 C2	D1 D2 D3 D4 D5
Use a computer program, of symbolic calculation, for the resolution of problems related to the subject.	A1 A2 A3 A4 A5		D1 D2 D3 D4 D5

Contents

Topic	
Linear algebra.	Operations with vectors in the plane and in space. The vector space Rn. Matrices and determinants. Basic operations with matrices and determinants. Discussion and resolution of systems of linear equations. Eigenvalues.
Calculation in several variables.	Introduction to the functions of several variables. Differentiable functions. Chain rule. Implicit derivation. Derivatives of higher order.
Optimization.	Maximum and minimum of scalar functions. Calculation of maxima and minima.
Integration of functions.	Integral of Riemann. The fundamental theorem of integral calculus. Calculation of primitives. Application to the calculation of areas. Integrals improper.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	13	20	33
Problem solving	13	20	33
Seminars	18	24	42
Practices through ICT	8	8	16
Problem and/or exercise solving	4	9	13
Essay questions exam	3	10	13

*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 of the theoretical bases and orientation, on the part of the teachers, on the contents of the subject.
Problem solving	Activities focused on the work on a specific topic, which allow to deepen or expand the contents of the discipline. They will be used as a complement to the theoretical classes.
Seminars	The students solve exercises in the classroom, in small groups, under the guidelines and supervision of the faculty and make an exposition of the solution of the same in front of fellow students.
Practices through ICT	Use of a scientific calculator to help solve the exercises proposed in seminars and master sessions. They take place in computer classrooms.

Personalized assistance

Methodologies	Description

Seminars	The students will demand from the faculty the clarifications that they deem opportune to better understand the subject and to develop successfully the proposed tasks. The individual work of the student will also be monitored.
Practices through ICT	The students will demand from the faculty the clarifications that they deem opportune to better understand the subject and to develop successfully the proposed tasks. The individual work of the student will also be monitored.

Assessment

	Description	Qualification	Training and Learning Results		
Seminars	The degree of consolidation of the competences analyzed in each session will be assessed. The students will deliver a series of exercises under the conditions and time established by the teaching staff.	25	A1 A2 A3 A4 A5	C1 C2	D1 D2 D3 D4 D5
Practices through ICT	Proof that the student must solve some exercises using the computer program used in the classroom.	5	A5		D1
Problem and/or exercise solving	Tests, to evaluate the acquired competences, which consist of a questionnaire with test questions and short answer questions. There will be four such tests during the course (20% of the final grade). In addition, as part of a final test that will take place at the end of the course, another test will be done on the whole subject, which will also consist of test questions and questions of Short answer (20% of the final grade).	45	A1 A2 A3 A4 A5	C1 C2	D1 D2 D3 D4 D5
Essay questions exam	Proof that will consist of theoretical questions and exercises that the student will respond by organizing and presenting, in an extensive way, the knowledge that has on the subject. A test of this type will be done at the end of the course.	25	A1 A2 A3 A4 A5	C1 C2	D1 D2 D3 D4 D5

Other comments on the Evaluation

Any student who, during the course, participates in tests of evaluation of two or more subjects of the program can not, in any case, obtain the qualification of NOT PRESENTED.

The students and students who do not exceed the subject in the ordinary call, and intend to do so in the extraordinary call, will keep the grades obtained during the course in each of the evaluation tests carried out, except the scores of the practical test of Matlab and the Two tests at the end of the course, which will be evaluated in the corresponding exam. Likewise, the grade of the solved exercises delivered during the course may be modified through a work supervised by the teaching staff (in this case, it will be necessary to contact the teaching staff well in advance).

Students are strongly requested to fulfil a honest and responsible behaviour. It is considered completely unacceptable any alteration or fraud (i.e., copy or plagiarism) contributing to modify the level of knowledge and abilities acquired in exams, evaluations, reports or any kind of teacher□s proposed work. Fraudulent behaviour may cause failing the course for a whole academic year. An internal dossier of these activities will be built and, when reoffending, the university rectorate will be asked to open a disciplinary record

Sources of information

Basic Bibliography

Besada, M.; García, F.J.; Mirás, M.A.;Quinteiro, C.; Vázquez, C., **Un mar de matemáticas**, 2016

Larson, R.; Hostetler, R. e Edwards, B. H., **Cálculo (volumes I e II)**, MacGraw Hill, 2000

Complementary Bibliography

Adams, R.A., **Cálculo**, Pearson, 2009

Besada, M.; García, J.; Mirás, M.; Quinteiro, C. e Vázquez, C., **Matlab: todo un mundo**, 2007

Besada, M.; García, J.; Mirás, M. e Vázquez, C., **Cálculo diferencial en varias variables**, Garceta, 2011

Besada, M.; García, J.; Mirás, M.; Quinteiro, C. e Vázquez, C., **Matemáticas para Química**, 2008

Recommendations

Subjects that continue the syllabus

Mathematics: Mathematics II/V10G061V01109

Other comments

*Titorías *individualizadas: The Mondays and Tuesday of 9:30 to 11:00 in the dispatch 28 of the first flat of the faculty of Sciences of the Sea. For *concertar another schedule of *titoria, speak with the professor.

Contingency plan

Description

=== EXCEPTIONAL MEASURES SCHEDULED ===
In front of it uncertain and unpredictable evolution of the sanitary alert caused by the COVID- 19, the University establishes join extraordinary planning that will actuate in the moment in that the administrations and the @propio institution determine it attending to criteria of security, health and responsibility, and guaranteeing the *docencia in a @escenario no *presencial or no totally *presencial. These already scheduled measures guarantee, in the moment that was prescriptive, the development of the *docencia of a way but *áxil and effective when being known beforehand (or with a wide advance) pole students and the teaching staff through the tool normalized and institutionalized of the teaching guides DOCNE*T.

=== ADAPTATION OF The METHODOLOGIES ===
* teaching Methodologies that keep : Any

* teaching Methodologies that modify : The theoretical kinds the Seminars *realizaránse in the Virtual dispatch of the professor. The Practices with support of the TIC disappear.

* Mechanism no *presencial of attention to the students (*titorías): virtual Dispatch of the professor, previous petition by *mail to mbesada@uvigo.gal

* Modifications (proceed) of the contained to impart: No they modify

* additional Bibliography to facilitate to car-learning: Without variation

* Other modifications

=== ADAPTATION OF The EVALUATION ===
* Proofs already realized
Seminars : [previous Weight 25%] [Weight Proposed 30%]

* pending Proofs that keep : All

* Proofs that modify [Practical with support of the TIC] => [disappear]

* New proofs: None