

		Teaching	Guide		
	Identifying D	ata			2021/22
Subject (*)	Mathematics 1			Code	730G05001
tudy programme	Grao en Enxeñaría Naval e Oceánica				'
		Descrip	otors		
Cycle	Period	Yea	r	Туре	Credits
Graduate	1st four-month period	Firs	t	Basic training	6
Language	Galician		,		'
eaching method	Face-to-face				
Prerequisites					
Department	Matemáticas				
Coordinador	Brozos Vázquez, Miguel		E-mail	miguel.brozos.va	azquez@udc.es
Lecturers	Brozos Vázquez, Miguel		E-mail	miguel.brozos.va	azquez@udc.es
	Campo Cabana, Marco Antonio			marco.campo@	udc.es
Web	campusvirtual.udc.es/moodle			·	
eneral description	This course is an introduction to Linear Algebra and differentiation and integration of functions of one variable.				

Contingency plan

1. Modifications to the contents

There are no changes in contents.

2. Methodologies

*Teaching methodologies that are maintained

Teaching methodologies are the same.

*Teaching methodologies that are modified

The type of teaching methodologies is the same, except for the fact that it becomes completely online. Moreover, there are may be changes in the weight of the evaluation activities.

3. Mechanisms for personalized attention to students

Students will be attended preferably by:

- Email: daily.
- Moodle platform: daily, specially by means of the forums for questions and discussions of each of the topics of the subject.
- Teams: for a direct interaction between students and profesor, in office hours or by appointment.
- 4. Modifications in the evaluation

The homework and exercise, that will be defended by Teams, will gain weight in a virtual teaching scenario.

*Evaluation observations:

The students with recognition of part-time dedication and academic exemption from attendance will be assessed through the objective tests in the same conditions as the rest of the students.

The second opportunity will be graded following the same criteria than in the first one.

5. Modifications to the bibliography or webgraphy

The main bibliographyc sources are available via Moodle. Recommendations for references are unchanged, but use of sources available online will be prefered.

	Study programme competences
Code	Study programme competences
A1	Skill for the resolution of the mathematical problems that can be formulated in the engineering. Aptitude for applying the knowledge on:
	linear algebra; geometry; differential geometry; differential and integral calculation; differential equations and in partial derivatives;
	numerical methods; algorithmic numerical; statistics and optimization
B1	That the students proved to have and to understand knowledge in an area of study what part of the base of the secondary education, and
	itself tends to find to a level that, although it leans in advanced text books, it includes also some aspects that knowledge implicates
	proceeding from the vanguard of its field of study
B2	That the students know how to apply its knowledge to its work or vocation in a professional way and possess the competences that tend to
	prove itself by the elaboration and defense of arguments and the resolution of problems in its area of study
B5	That the students developed those skills of learning necessary to start subsequent studies with a high degree of autonomy
В6	Be able to carrying out a critical analysis, evaluation and synthesis of new and complex ideas.



C4 Recognizing critically the knowledge, the technology and the available information to solve the problems that they must face.

Learning outcomes				
Learning outcomes		Study programme		
		competences		
To identify mathematical concepts and tools to solve problems that can appear in an engineering context.		B1	C4	
		B2		
		B5		
		В6		
To show the ability of using techniques of Linear Algebra, Geometry and Calculus to be applied in problem solving.	A1	B1	C4	
		B2		
		B5		
		В6		

	Contents			
Topic	Sub-topic			
The R^n space	- The complex plane. Operations with complex numbers. Polar form.			
	- Vector structure:			
	The linear spaces R^2 and R^3.			
	Linear subspaces.			
	Bases and dimension. Coordinates.			
	Systems of linear equations.			
	- Metric structure:			
	Scalar product, norm and distance.			
	- Topological structure:			
	Topological classification of points and sets.			
	Polar, cylindrical and spherical coordinates.			
Linear maps	Maps.			
	Linear maps.			
	Basic properties of linear maps.			
	Matrix associated to a linear map.			
	Diagonalization of endomorphisms: invariant subspaces, eigenvalues and			
	eigenvectors, diagonalizable endomorphisms.			
Differential Calculus	Topology in R.			
	Functions of one variable. Continuity.			
	Smooth functions of one variable.			
	Taylor polynomial.			
	Parametrized curves in R^n. Reparametrizations.			
Integral Calculus	Riemann sums.			
	Integrable functions. Main theorems in integral calculus: Mean value theorem,			
	Fundamental theorem and Barrow's rule.			
	Computation of primitive functions.			
	Polynomial interpolation.			
	Numerical integration: Simpsons' rule.			
	Computation of volumes. Length of curves and line integrals of scalar functions.			

Planning				
Methodologies / tests	Competencies	Ordinary class	Student?s personal	Total hours
		hours	work hours	
Guest lecture / keynote speech	A1 B5 B6 C4	30	30	60

Problem solving	A1 B1 B2 B5 B6 C4	30	30	60
Supervised projects	A1 B1 B2 B5 B6 C4	0	10	10
Mixed objective/subjective test	A1 B1 B2 B5 B6 C4	8	8	16
Personalized attention		4	0	4

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

Methodologies				
Methodologies	Description			
Guest lecture /	The course will be developed during the regular classes where the professor will explain the main concepts and results of the			
keynote speech	subject.			
Problem solving	This classes are organiized in such a way that we practice how to solve the proposed problems.			
Supervised projects	Homework that professors is going to asses during the course.			
Mixed	Three exams will be carried out during the course. The first one will be a partial exam where only some of the chapters will be			
objective/subjective	considered. A final exam will be done at the end of the semester. Furthermore a computer exam will be carried out.			
test				

	Personalized attention
Methodologies	Description
Problem solving	The contents of the subject as well as the developed methodologies require that students also work by themselves. This can
Supervised projects	generate some personalized questions that they can solve in office hours. Office hours will be face-to-face if possible, otherwise they will be online.
	The students with recognition of part-time dedication and academic exemption from attendance can use the tutorials as a reference in order to follow the course and the autonomous work.

		Assessment	
Methodologies	Competencies	Description	Qualification
Mixed	A1 B1 B2 B5 B6 C4	Written exams to assess the knowledge of the subject by the students. The subject	80
objective/subjective		will consist on two parts and the final qualification of the subject will be the addition of	
test		the qualifications obtained at each of them.	
		1) The first part will be performed during the teaching period and will involve all the	
		chapters studied until the celebration of the exam. If the student passes this exam,	
		the qualification is retained until the end of the present course. This part will be	
		recoverable in the final exam (second chance), to be held in July.	
		2) The second (and final) exam will be carried out in the period of final exams. It will	
		involve the second part of the subject and a second chance to pass the first part.	
		In case of passing any of these two parts, either in the partial exam or in the final	
		exam of January, the qualification is retained for the present course until the exam of second opportunity.	
		To pass the subject is compulsory to obtain at least 30% of the maximum grade in each part.	
Supervised projects	A1 B1 B2 B5 B6 C4	Students must do an autonomous work related with the contents of the subject and	20
		following specific guidelines.	

Assessment comments

The students with recognition of part-time dedication and academic exemption from attendance will be assessed through the objective tests in the same conditions as the rest of the students.

The second opportunity and the extraordinary exam in december will be graded following the same criteria than in the first one.

Fraudulent behaviour will result in a "0" qualification in the subject for the two opportunities.

	Sources of information
Basic	- Salas, L., Hille, E., Etgen, G. (2003). Calculus. vol I-II. Madrid. Reverté
	- García Castro, F., Gutiérrez Gómez, A. (1990-1992). Cálculo Infinitesimal. I-1,2. Pirámide. Madrid
	- Marsden, J., Tromba, A. (2010). Cálculo vectorial. ADDISON WESLEY
	- Tébar Flores, E. (1977). Cálculo Infinitesimal. I-II. Madrid. Tébar Flores
	- García, A. et al. (2007). Cálculo I. Teoría y Problemas de Análisis Matemático en Una Variable. Madrid. Clagsa
	- Larson, R., Hostetler, R., Edwards, B. (2013). Calculus Brooks Cole
	- Coquillat, F (1997). Cálculo Integral. Madrid. Tebar Flores
	- Soler, M., Bronte, R., Marchante, L. (1992). Cálculo infinitesimal e integral. Madrid
	- Burgos Román, Juan de (2007). Cálculo infinitesimal de una variable. Madrid. McGraw-Hill
	- Villa Cuenca, A. (1994). Problemas de Álgebra CLAGSA
	- Grossman, S. I. (1995). Álgebra Lineal con Aplicaciones Mcgraw-Hill
	- Granero Rodríguez, F. (1991). Álgebra y Geometría Analítica. Mcgraw-Hill
	- Ladra, M., Suárez, V., Torres, A. (2003). Preguntas test de Álgebra Lineal y Cálculo Vectorial. E. U. Politéctica
	- Burgos, J. (1993). Álgebra lineal. McGrawHill
	- Larson, R., Edwards, B.H., Calvo, D. C. (2004). Álgebra lineal Pirámide Ediciones
	- Lay, D. C. (2007). Álgebra lineal y sus aplicaciones. Addison-Wesley
	- Gómez Bernúdez, C. (2015). Problemas de Álxebra Linear Andavira
	- Gómez Bernúdez, C, Gómez Gratacos, F. (2018). Problemas de Cálculo. Anvavira
	 <
Complementary	Recoméndanse recursos bibliográficos da páxina http://maxima.sourceforge.net/para o uso do programa Maxima, que
	servirá de apoio nesta materia. www.intmath.com www.ies.co.jp/math/java/ http://193.146.36.49/mat1

Recommendations	
Subjects that it is recommended to have taken before	
Subjects that are recommended to be taken simultaneously	
Subjects that continue the syllabus	

Mathematics 2/730G05005

Differential equations/730G05011

Other comments

Students are encouraged to attend the "Course 0" with preliminaries in the contents of the couse. Homework of this course will attend to the following: Preferably, virtual homework will be used, when printing is not required. ? In the case that paper is needed, then: No plastic materials will be used. &n - - - Printing will be done both sides. - - Recycled paper will be used as possible.

- Unnecessary printed drafts will be avoided.

In general, a sustainable use of natural resources will be

done. Moreover, ethic principles related to sustainability will be

followed.



(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.