Universida_{de}Vigo

Subject Guide 2023 / 2024

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IDENTIFYIN	G DATA					
Mathematic	s: Mathematics 1					
Subject	Mathematics:					
	Mathematics 1					
Code	V11G201V01103					
Study	Grado en Química					
programme					<u> </u>	
Descriptors		Choose	Year	Q	uadmest	er
Tasahina	0 #En aliah Esian allu	Basic education	IST	19	50	
leaching						
Dopartmont	Galiciali					
Coordinator	Quinteiro Sandomingo María del Carmen					
	Quinteiro Sandomingo, María del Carmen					
E-mail	quinteir@uvigo.gal					
Web	http://moovi.uvigo.gal/					
General	"Machine translation into English of the origin	al teaching guide".				
description	······································	si sessi gara s				
	Ine course has theoretical contents, as well a integration. Undertaking this course will allow the student mathematical language and let them to acqui related computer applications. English Friendly course. International student references in English, b) tutoring sessions in E	s practical, of linear algebra, is to improve his/her capacity re certain proficiency in calcu s may request from the teach English, c) exams and assessi	multivaria to unders ulus and in ners: a) m ments in E	able calcul stand and u nitiate one: aterial and English.	us and use of self in th bibliogra	e use of aphic
Training an	d Learning Results					
Code						<u>.</u>
A1 Student or voca problen	is can apply their knowledge and understanding tion, and have competences typically demonst his within their field of study	g in a manner that indicates a rated through devising and su	a profession ustaining a	onal appro arguments	ach to th and solv	ieir work ving
B4 Ability f	or analysis and synthesis					
C21 Know m	athematical concepts based on previous ones	and be able to use them in th	ne differer	nt contexts	of Chem	histry
DI Ability t	o solve problems					
Expected re	esults from this subject					
Expected res	ults from this subject			Trainin	g and Le	arning
	oleonyalyon of a cayore matrix and electify and	adratic forme attanding to the	o ciar		Kesults	
	eigenvalues of a square matrix and classify qui with roal and complex numbers	auratic forms attending to the	e sign.		C21	
To apply the	differential calculus to the local approximation	of functions and to the recei	ution of	Λ1 D4	C21	
optimization	UNELENDAL CALCUUS TO THE IOCAL ADDITUX[[[]][A][[O]]					1 7 1
	problems.	of functions and to the reson		AI D4	021	DI
Employ integ	problems. gral calculus to determine areas and volumes.			AI 04	C21	

Contents			
Торіс			
Real numbers and complex numbers	The real numbers and the real line. Operations with real numbers.		
	Complex numbers. Operations with complex numbers.		
Eigenvalues and symmetric matrices	Computation of eigenvalues of a matrix.		
	Diagonalizable matrices. Quadratic forms.		
	Sign of a quadratic form.		

Calculus of several variables	Introduction to the real functions of several variables. Differentiable functions. Higher order derivatives. The chain rule. Implicit differentiation. Computation of extreme points
Integration in one and several variables	Riemann integral. Fundamental Theorem of the Integral Calculus. Calculation of primitives. Integrals of functions of several variables on bounded domains.

Planning			
	Class hours	Hours outside the	Total hours
		classroom	
Lecturing	22	28	50
Problem solving	26	26	52
Practices through ICT	6	3	9
Problem and/or exercise solving	0	10	10
Problem and/or exercise solving	0	7	7
Essay questions exam	2	20	22
*The information in the planning table is for	r guidance only and does n	ot take into account the hete	erogeneity of the students.

Methodologies	
	Description
Lecturing	The teaching staff will expose the theoretical bases of the subject. They will present possible applications, formulate problems, questions and exercises. They will propose tasks and activities oriented towards the methods and techniques to employ to carry them out.
Problem solving	Activity in which we will propose problems and/or exercises related with the subject. The student should develop the correct solutions by means of exercice of routines, the application of formulas or algorithms, the application of procedures of transformation of the available information and the interpretation of the results. It will be employed as a supplement of the lectures.
Practices through ICT	Activities oriented towards learning and handling mathematical computer programs, for calculus and graphical representation of functions and data.

Personalized assistance				
Methodologies Description				
Lecturing	Each student will request the teaching staff the clarifications that he/she sees fit for a better understanding of the subject and successfully develop the proposed tasks. These queries will be responded during the tutorials. The tutorial sessions will be able to be realized remotely having made a previous agreement with the professor.			
Practices through ICT	Each student will request the teaching staff the clarifications that he/she sees fit for a better understanding of the subject and successfully develop the proposed tasks. These queries will be responded during the tutorials. The tutorial sessions will be able to be realized remotely having made a previous agreement with the professor.			
Problem solving	Each student will request the teaching staff the clarifications that he/she sees fit for a better understanding of the subject and successfully develop the proposed tasks. These queries will be responded during the tutorials. The tutorial sessions will be able to be realized remotely having made a previous agreement with the professor.			

Assessment				
	Description	Qualification	n Trainin	g and
			Learning	Results
Problem and/or exercise solving	Each student should resolve given tasks during the time and under the conditions established by the teaching staff. These activities will be related to the first three lessons of the program and will be done during the class hours corresponding to Lecturing or Problem solving.	35	A1	D1
Problem and/or exercise solving	Each student should resolve given tasks during the time and under the conditions established by the teaching staff. These activities will be related to the last lessons of the program and to the handling of computer programs. It will be done during the class hours corresponding to Lecturing, Problem solving or Practices through ICT.	25	A1	D1

Essay questions exam	Final exam. It will include questions and exercises that the students will answer organizing and presenting the knowledge that they have on the subject.	40	A1	B4	C21	D1
	It will take place on the official exam dates for each evaluation opportunity.					

Other comments on the Evaluation

The final qualification of the subject (NF) will be computed by the formula:

NF=A+(10-A)E/10

where A is the sum of the scores obtained by "Problem and/or exercise solving" (up to 6 points) and E is the "Essay questions exam" score (up to 10 points).

To pass the subject the final score has to be greater or equal to 5 points (NF>=5). The students who fail to pass the subject on the first opportunity, and want to do it on the second one, will have to repeat the "Essay questions exam". The score obtained by "Problem and/or exercise solving" will be the same for the second opportunity.

The qualification NOT PRESENTED can not be given to a student who attended at least one of the final exams.

Sources of information

Basic Bibliography

Adams, R. A., **Cálculo**, 6^a, Pearson, 2009

Besada, M.; García, J.; Mirás, M.; Quinteiro, C.; Vázquez, C., Matemáticas para os graos de Ciencias, Servicio de Publicacións. Universidade de Vigo, 2016

Larson, R.; Hostetler, R.; Edwards, B., Cálculo esencial, Cengage Learning, cop., 2010

Rogawski, J., **Cálculo: una variable**, 2ª, Editorial Reverté, 2016

Rogawski, J., **Cálculo: varias variables**, 2ª, Editorial Reverté, 2012

Steiner, E., The Chemistry Maths Book, Oxford University Press, 2008

Complementary Bibliography

Recommendations

Subjects that continue the syllabus Mathematics: Mathematics 2/V11G201V01108

Subjects that are recommended to be taken simultaneously

Biology: Biology/V11G201V01101 Physics: Physics I/V11G201V01102 Chemistry: Chemistry Lab I/V11G201V01105 Chemistry: Chemistry 1/V11G201V01104