IDENTIFYING DATA

Mathematics: Mathematics 2

Subject	Mathematics: Mathematics 2			
Code	V11G201V01108			
Study programme	Grado en Química			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language	#EnglishFriendly Galician			
Department				
Coordinator	Mirás Calvo, Miguel Ángel			
Lecturers	Mirás Calvo, Miguel Ángel			
E-mail	mmiras@uvigo.es			
Web	http://moovi.uvigo.gal			
General description	The subject is a basic introduction to vector calculus, differential equations and statistics. It will be oriented to apply the mathematical models studied to specific problems of the scientific fields.			

Training and Learning Results

Code	
A1	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
B4	Ability for analysis and synthesis
C21	Know mathematical concepts based on previous ones and be able to use them in the different contexts of Chemistry
D1	Ability to solve problems

Expected results from this subject

Expected results from this subject	Training and Learning Results			
To use vector calculus to compute lengths of curves, areas of surfaces and the curl of a vector field.	A1	B4	C21	D1
To build and solve differential equation models of simple systems from physics or chemistry.	A1	B4	C21	D1
(*)Know *xestionar and apply the *requirementos legal of the mercantile company, knowing the *particularidades *proprias of the distinct types of mercantile societies, *aduirindo capacity to inform and argue envelope the said questions.				
To compute probabilities associated to discreet and continuous random variables that follow well known probability distributions.	A1	B4	C21	D1
To use computer programs for mathematical computations and graphic representation.		B4		D1

Contents

Topic	
Line and surface integrals	Curves and parametrizations Line integrals Parametric surfaces Surface integrals and flux integrals
Ordinary differential equations	Mathematical models and methods for solving first-order differential equations Linear models of higher order
Basic probability theory	Probability spaces Random variables

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	22	33	55
Practices through ICT	0	6	6
Problem solving	16	26	42
Problem solving	16	26	42
Essay questions exam	2	3	5

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

Methodologies

	Description
Lecturing	The teachers will present the theoretical foundations of the different topics; showing possible applications; formulating problems, questions and exercises; and proposing tasks and activities with orientations on the methods and techniques to employ to carry them out.
Practices through ICT	Activities oriented to learn how to handle computer programs for the calculation and graphic representation of functions and data.
Problem solving	The students will have to solve the proposed problems and exercises on vector calculus.
Problem solving	The students will have to solve the proposed problems and exercises on differential equations and probability.

Personalized assistance

Methodologies	Description
Lecturing	The doubts concerning the theoretical concepts presented in the classes will be attended in tutoring hours.
Problem solving	The doubts relative to vector calculus will be attended during the classes and in the scheduled tutoring hours.
Practices through ICT	The doubts relative to the laboratory classes will be attended in the scheduled tutoring hours.
Problem solving	The doubts relative to differential equations and probability will be attended during the classes and in the scheduled tutoring hours.

Tests	Description
Essay questions exam	The doubts relative to the final examinations will be attended in the scheduled tutoring hours.

Assessment

	Description	Qualification	Training and Learning Results	
Problem solving	Tasks (that conform the so called continuous evaluation) in which each student will have to solve applied problems or exercises of vector calculus.	30	A1	D1
Problem solving	Tasks (that conform the so called continuous evaluation) in which each student will have to solve applied problems or exercises of ordinary differential equations and probability.	30	A1	D1
Essay questions exam	Final examination. Individual exam that will take place right after the class period and that will include theoretical questions and exercises.	40		C21

Other comments on the Evaluation

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

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

where A is the continuous evaluation score and E is the final examination score.

To pass the matter the final score has to be bigger or equal than 5 points (NF>=5). The students who fail to pass the matter at the first opportunity and want to do it in July, will have to repeat the final examination. The continuous evaluation score will be the same for the July evaluation.

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

Sources of information
Basic Bibliography
Besada, M.; García, J.; Mirás, M.; Quinteiro, C.; Vázquez, C., **Un mar de Matemáticas. Matemáticas para os graos de Ciencias**, 1, Servicio de Publicacións Universidade de Vigo, 2016

Mirás Calvo, Miguel Ángel; Sánchez Rodríguez, María Estela, **Técnicas estadísticas con hoja de cálculo y R: azar y variabilidad en las ciencias naturales**, 1, Servicio de Publicacións Universidade de Vigo, 2018

Adams, Robert A., **Cálculo**, 6, Addison Wesley, 2009

Simmons, George F., **Ecuaciones diferenciales: con aplicaciones y notas históricas**, 2, McGraw-Hill, 2002
Complementary Bibliography

Recommendations

Subjects that are recommended to be taken simultaneously
Physics: Physics 2/V11G201V01107
Geology: Geology/V11G201V01106
Chemistry: Chemistry Lab II/V11G201V01110
Chemistry: Chemistry 2/V11G201V01109

Subjects that it is recommended to have taken before
Biology: Biology/V11G201V01101
Physics: Physics I/V11G201V01102
Mathematics: Mathematics 1/V11G201V01103
Chemistry: Chemistry Lab I/V11G201V01105
Chemistry: Chemistry 1/V11G201V01104