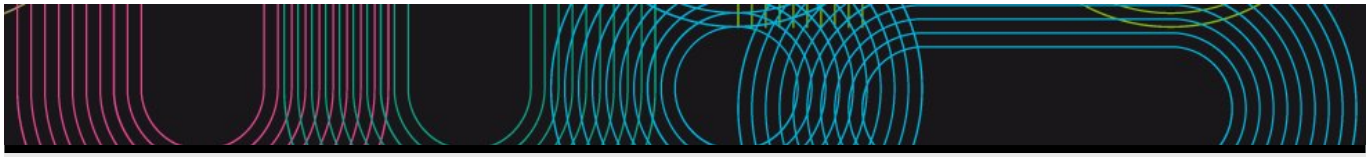

IDENTIFYING DATA				
Mathematics: Mathematics I				
Subject	Mathematics: Mathematics I			
Code	V11G200V01104			
Study programme	(*)Grao en Química			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	Galician			
Department				
Coordinator	Quinteiro Sandomingo, María del Carmen			
Lecturers	Quinteiro Sandomingo, María del Carmen			
E-mail	quinteir@uvigo.es			
Web	http://faitic.uvigo.es/			
General description	"Machine translation into english of the original teaching guide" The matter collects contents, theoretical and practical of algebra linear and calculus (in a variable). The follow-up of the same will improve the capacity of compression and employment of the mathematical language. It will allow to the students purchase skills of calculation and initiate in the use of computer applications.			

Competencies	
Code	
A4	Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences
C22	Process and perform computational calculations with chemical information and chemical data
C23	Present oral and written scientific material and scientific arguments to a specialized audience
C29	Demonstrate skills for numerical calculations and interpretation of experimental data, with special emphasis on precision and accuracy
D1	Communicate orally and in writing in at least one of the official languages of the University
D3	Learn independently
D4	Search and manage information from different sources
D5	Use information and communication technologies and manage basic computer tools
D6	Use mathematics, including error analysis, estimates of orders of magnitude, correct use of units and data representations
D7	Apply theoretical knowledge in practice
D8	Teamwork
D9	Work independently
D12	Plan and manage time properly
D13	Make decisions
D14	Analyze and synthesize information and draw conclusions
D15	Evaluate critically and constructively the environment and oneself

Learning outcomes		
Expected results from this subject	Training and Learning Results	
Operate with vectors, distances and angles.	C22 C29	D6 D7 D9
Formulate matrix models to tackle problems of distinct branches of the Science.	C22 C29	D5 D6 D9
Dominate the properties of the matrices and of his application for the approach and resolution of systems of linear equations.	C29	D7 D9
Resolve systems of linear equations using packages of symbolic and numerical calculation.	C22 C29	D5 D7

Operate properly with real numbers and complexes.		C22 C29	D6 D7
Realise calculations of limits, continuity, derivative and integrals of real functions of real variable and of partial derivatives of functions of several variables.		C22 C29	D7
Identify real problems that can be tackled by means of the differential calculation and integral and resolve them with these technicians.		C22 C29	D6 D7 D9 D14
Analyse and represent functions, knowing deduce properties of the same from his graphic.		C29	D7
Formulate and resolve problems of optimisation.		C29	D7 D9 D14
Calculate integrals of line of scalar and vectorial fields and know his connection with concepts of the Physics.		C29	D7
Handle some computer package of symbolic calculation to resolve problems of differential calculation and integral.		C22	D5 D7
Express of oral form and writing, mathematical concepts.	A4	C23	D1 D3 D4 D5 D8 D12 D13 D14 D15

Contents

Topic	
Introduction to the real functions of real variable	The real numbers and the straight real. Operations with real numbers. Real functions of real variable. Command and rank. Graphic of a real function of real variable. Elementary functions.
Differential calculation in a variable	Limits and continuity of real functions of real variable. Derived of a function in a point. Calculation of derivatives. Consequences of the *derivación. Relative extremes. Graphic representation of real functions of real variable.
Integration of real functions of real variable.	Integral of Riemann. Fundamental theorem of the integral calculation. Calculation of primitive.
Real vectorial spaces	Operations with vectors in the plane and in the space. Scalar product. Angle formed by two vectors. Vectorial product in *R3. Mixed product. Vectorial spaces. *Subespacios. Bases.
Systems of linear equations	Matrices. *Determinantes. Basic operations with matrices and *determinantes. Discussion and resolution of systems of equations *lineares. Method of Gauss.
Scalar functions and vectorial functions	Scalar functions and vectorial functions. Partial derivatives of scalar functions. Vector gradient. Ways and integrals of line. Fields *conservativos.
Complex numbers	Complex numbers. Operations with complex numbers.

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	20	30	50
Practice in computer rooms	6	3	9
Troubleshooting and / or exercises	26	39	65
Long answer tests and development	3	22	25
Practical tests, real task execution and / or simulated.	0	1	1

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

Methodologies

	Description
Master Session	The *profesorado will expose the theoretical foundations of the matter; it will present possible applications; it will formulate problems, questions and exercises; it will propose tasks and activities with orientations on the methods and technical to employ to carry out them.

Practice in computer rooms	Activities oriented to the learning and handle of computer programs of Mathematics, for the calculation and the graphic representation of functions and data.
Troubleshooting and / or exercises	In this activity, each student, well of individual way or in group, will have to resolve exercises and *probemas related with the matter. It will have to be able to formulate the mathematical model more convenient, apply the most appropriate technician to resolve each case and interpret and present, of oral way or written, the results.

Personalized attention

Methodologies	Description
Troubleshooting and / or exercises	Each student will sue to the *profesorado the explanations that estimate timely for better comprise the matter and develop successfully the tasks that were him proposed. These queries will attend in the schedule of *tutorías.
Practice in computer rooms	Each student will sue to the *profesorado the explanations that estimate timely for better comprise the matter and develop successfully the tasks that were him proposed. These queries will attend in the schedule of *tutorías.

Assessment

	Description	Qualification	Training and Learning Results
Troubleshooting and / or exercises	Each student will have to resolve a series of exercises or problems in the term of time and under the conditions established by the *profesorado. The works sued will be able to be of distinct types: presentation of a document written, exit to the *encerado, oral exhibition of any subject related with the matter,... These activities will allow to evaluate of way continued the learning of each student.	15	A4 C23 C29 D1 D3 D4 D6 D7 D8 D9 D12 D13 D14 D15
Long answer tests and development	Final examination. Proof for the evaluation of the competitions purchased. It will realise when finishing the period *lectivo and will include questions and exercises to which the students and the students will answer organising and presenting, of extensive way, the knowledges that have on the matter.	80	C29 D1 D6 D7 D12
Practical tests, real task execution and / or simulated.	Proof to evaluate the skill in the handle and application of the computer resources learnt during the practices of laboratory. It will take place during the sessions of practices of computing	5	C22 D5 D6

Other comments on the Evaluation

To surpass the matter, the note obtained will have to be equal or upper
to 50% of the total punctuation.The students and the students that do not surpass the matter in January, and pretend to do it in the announcement of July, will have to repeat *obligatoriamente the final examination. The note obtained during the course in the others proofs
(Resolution of problems and/or exercises; practical Proofs, of execution of real tasks and/or mock) will keep for the announcement
of July.Any student that participate in one of the two proofs of long answer realised when finishing the period *lectivo (in January or, to be the case, in July) will not be able to, in no case,
obtain the qualification of NO PRESENTED.

Sources of information

Basic Bibliography

Complementary Bibliography

A.S. Ackleh, E.J. Allen, R.B. Kearfott e P. Seshaiyer, **Classical and Modern Numerical Analysis**, 1ª ed., CRC Press, 2009

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

M. Besada, F. J. García, M. A. Mirás, C. Quinteiro, C. Vázquez, **Matemáticas á Boloñesa**, 1ª ed., Servizo de Publicacións da Universidade de Vigo, 2014

R. Larson, R. Hostetler, **Precálculo**, 8ª ed., Cengage Learning, 2012

J. Medina Moreno, **Álgebra lineal y cálculo para estudios de químicas con problemas resueltos**, 1ª ed., Paraninfo, 2015

G. Pota, **Mathematical Problems for Chemistry Students**, 1ª ed., Elsevier, 2006

J. Rogawski, **Cálculo: una variable**, 2ª ed., Editorial Reverté, 2012

E. Steiner, **The Chemistry Maths Book**, 1ª ed., Oxford University Press, 2008

Centro virtual de divulgación de las Matemáticas, **http://www.divulgamat.net/**,

Recommendations

Subjects that continue the syllabus

Mathematics: Mathematics II/V11G200V01203
Numerical methods in chemistry/V11G200V01402

Subjects that are recommended to be taken simultaneously

Biology: Biology/V11G200V01101
Physics: Physics I/V11G200V01102
Chemistry, physics and biology: Integrated laboratory I/V11G200V01103
Chemistry: Chemistry I/V11G200V01105

Other comments

It recommends have *cursado the matter of Mathematics of the last course of *Bachillerato.