UNIVERSIDADE DA CORUÑA

Teaching Guide				
Identifying Data				2015/16
Subject (*)	Matemáticas 1		Code	610G01001
Study programme	Grao en Química			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	First	FB	6
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Matemáticas			
Coordinador	Otero Verea, Jose Luis	E-mail	luis.verea@udc.es	
Lecturers	Ferreiro Ferreiro, Ana María García Rodríguez, José Antonio Otero Verea, Jose Luis Prieto Aneiros, Andrés	E-mail	ana.fferreiro@udc.es jose.garcia.rodriguez@udc.es luis.verea@udc.es andres.prieto@udc.es	
Web				
General description	Esta asignatura pretende o desenrolo de competencias que permitan ao alumnado obterr un conocimento critico do calculo diferencial e integral así como unha pequena introducción ao alxebra lineal e as ecuacions diferenciais.			

Study programme competences	
Code	Study programme competences
A15	Ability to recognise and analyse new problems and develop solution strategies
A16	Ability to source, assess and apply technical bibliographical information and data relating to chemistry
A20	Ability to interpret data resulting from laboratory observation and measurement
A24	Ability to explain chemical processes and phenomena clearly and simply
A25	Ability to recognise and analyse link between chemistry and other disciplines, and presence of chemical processes in everyday life
A27	Ability to teach chemistry and related subjects at different academic levels
B1	Learning to learn
B2	Effective problem solving
B3	Application of logical, critical, creative thinking
B6	Ethical, responsible, civic-minded professionalism
C1	Ability to express oneself accurately in the official languages of Galicia (oral and in written)
C3	Ability to use basic information and communications technology (ICT) tools for professional purposes and learning throughout life
C6	Ability to assess critically the knowledge, technology and information available for problem solving

Learning outcomes			
Learning outcomes	Study programme competences		
O estudo, representación e interpretación de funcións elementais de unha e varias variables.	A15 A16 A20 A24 A25 A27	B1 B2 B3 B6	C1 C3 C6
Utilizar con destreza as técnicas de cálculo de primitivas e as súas aplicacións.	A20 A24 A25 A27	B1 B2 B3 B6	C1 C3 C6

Resolver sistemas de ecuacions lineais e operar con cálculo matricial	A20 A24 A25 A27	B1 B2 B3 B6	C1 C3 C6
Plantexar e resolver modelos sinxelos que conleven ecuacións e sistemas de ecuacións diferenciais.	A20 A24 A25 A27	B1 B2 B3 B6	C1 C3 C6

Contents	
Topic	**Sub-topic**
? Differentiation	o Basic Rules of Differentiation. o The Chain Rule. o Techniques Differentiation. o L'Hôpital's Rule. Taylor's Theorem. o Applications of Differentiation. o Maxima and Minima. o Optimisation Problems. o The Newton-Raphson Method.
? Integration	o Integration as Summation. o Fundamental Theorem of Calculus. o Some Basic Integrals. o Integration by Substitution. o Integration by Parts. o Integration of Rational Functions. o Geometrical Applications of Integration. o Numerical Integration. Simpson's Rule. o Improper Integrals. Integración numérica: método de Simpson. Integrales impropias.
? Linear Algebra	o Systems of Linear Equations o Elementary operations. o The Algebra of Matrices. o Determinants. Basic properties. o The determinant rank. o Eigenvalues and Eigenvectors. o Normal forms for matrices. o Cayley-Halmiton theorem.
? Ordinary Differential Equations.	o First Order Differential Equations. o Separable First Order Differential Equations. o Linear First Order Differential Equations. o Applications of First Order Differential Equations. o Second Order Linear Differential Equations with Constant Coefficients. o Homogeneous Linear Systems with Constant Coefficients.

Planning

Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A15 A16 A24 A25 B1 B2 B3 C1 C3 C6	32	64	96
Problem solving	A15 A20 B1 B2 B3	8	18	26
Supervised projects	A15 A27 B2 B3 B6	8	16	24
Multiple-choice questions	B2 B3	3	0	3
Personalized attention		1	0	1
(*)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 / keynote speech	desarrollo dos conceptos e resolución de problemas
Problem solving	Cuestionarios, boletins e exámenes de outros cursos que periódicamente se poñen a disposición dos alumnos sobre distintos contiidos e que o alumno terá que resolver.
Supervised projects	Traballo sobre temas propostos por o profesor, presentarase un resumo teórico xunto con un boletín de problemas resoltos acerca do tema correspondente
Multiple-choice questions	proba orientada a evaluación dos contidos teóricos que se traballan nas sesions maxistrales

Personalized attention	
Methodologies	Description
Guest lecture / keynote speech Supervised projects Problem solving	A atención personalizada que se decribe en relación a estas metodoloxías concibense como momentos de traballo presencial para o alumnado co profesor, po lo que implican unha participación obligatoria para o alumando. A forma e o momento en que se desarrollará indicarase en relacción a cada actividad ao largo do curso según o plan de traballo da asignatura

Assessment			
Methodologies	Competencies	Description	Qualification
Guest lecture / keynote speech	A15 A16 A24 A25 B1 B2 B3 C1 C3 C6	Questions to the students.	10
Multiple-choice questions	B2 B3	Test with 20 questions about Mathmatics and 10 about Statistics, with 4 options, and for each 3 failed answers one correct answer will be eliminated. Competencie C6 will be assessed.	70
Supervised projects	A15 A27 B2 B3 B6	Development of specific aspects with examples and solved problems. Competence B3 will be assessed.	10
Problem solving	A15 A20 B1 B2 B3	Delivery of exercises and solved exams. Competences A15, B2 and C3 will be assessed.	10

Assessment comments

To pass the subject it is compulsory to obtain a final mark, after adding all the activities marks, at least 50% of the total qualification. To get a NO SHOW mark, the student will not be able to attend the final multiple-choice questions exam. The guideline to pass the subject in July is the previous one, or to get a mark in the final multiple-choice exam not lower than 50%. Regarding following academic years, the teaching guides management, including the assessment, refers only to the ongoing academic year. Therefore, all the activities and assessment methodologies scheduled and planned for the following year will start from zero. Supervised projects and problem solving of part-time students will be assessed in a personalized way.

Sources of information	
Basic	- LARSON (2006). CALCULO. McGrawHill
Complementary	- Bradley (). Cálculo. Prentice Hall - Finney (). Cálculo. Addison-Wesley - Alfonsa García (). Cálculo I. CLGSA - Salas / Hille / Etgen (). Cálculus. Reverté - NEUHAUSER (2004). MATEMÁTICAS PARA CIENCIAS . Pearson - Rogawski (2014). Cálculo, una variable. Reverté

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments
É conveniente ter coñecementos de matemáticas de 2 bacharelerato, si non os ten recomendase facer o curso de nivelación.

(*)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.