UNIVERSIDADE DA CORUÑA

Teaching Guide				
Identifying Data				2014/15
Subject (*)	Matemáticas 2		Code	610G01002
Study programme	Grao en Química			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	First	FB	6
Language	Spanish			
Prerequisites				
Department	Matemáticas			
Coordinador	Otero Verea, Jose Luis	E-mail	luis.verea@udc.es	
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Web				
General description	Esta asignatura pretende o desenvolvemento de competencias que permitan ó alumnado desenvolver un coñecemento crítico do calculo diferencial e integral de varias variables, ampliar os coñecementos en ecuacións diferenciais, así como una pequena introducción á estatística.			

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			
Subject competencies (Learning outcomes)	Study programme competences		
The study, representation and interpretation of elementary functions of univariate and multivariate functions.	A15 A16 A20 A24 A25 A27	B1 B2 B3 B6	C1 C3 C6
Use skilfully the techniques of calculation of primitive and its applications.	A15 A16 A20 A24 A25 A27	B1 B2 B3 B6	C1 C3 C6

Set out and solve simple models that comport equations and systems of differential equations.	A15 A16 A20 A24 A25 A27	B1 B2 B3 B6	C1 C3 C6
Solve problems of basic statistical methods from the descriptive point of view	A15 A16 A20 A24 A25 A27	B1 B2 B3 B6	C1 C3 C6

Contents	
Topic	**Sub-topic**
? Functions of Several Variables.	o Graphs an Level Curves. o Polar Coordinates. Cylindrical and Spherical Coordinates. o Partial Derivatives. Differentiability and Gradient. o Directional Derivatives. Repeated Partial Derivatives. o The Chain Rule. The Jacobian Matrix. The Hessian. o Critical Points. Maxima and Minima. o Constrained Optimisation. Lagrange Multipliers. o Least Squares Analysis.
? Multiple Integrals.	o Repeated Integrals. Double Integrals. Triple Integrals. o Change of Variable in Multiple Integrals. o Curve Integrals. o Potential Function. o Green's Theorem. o Surface Integrals. o Stokes' Theorem.
? Ordinary Differential Equations.	o First Order Differential Equations. o Separable First Order Differential Equations. o Homogeneous equations. o Exact First Order Differential Equations. o Linear First Order Differential Equations. o Bernoulli Equations. o Applications of First Order Differential Equations. o Linear Differential Equations with Constant Coefficients. o The Method of Undetermined Coefficients. o Variation of Parameters. o Linear Systems with Constant Coefficients.
Descriptive Statistics	Univariate Descriptive Statistics Bivariate Descriptive Statistics Simple Linear Regression Analysis

Planning			
Methodologies / tests	**Ordinary class hours**	**Student?s personal work hours**	**Total hours**
Guest lecture / keynote speech	32	64	96
Problem solving	8	18	26

Supervised projects	8	16	24
Multiple-choice questions	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	Explanation of the contents and solution of problem from previous academic years.
Problem solving	Question lists and exams from other courses that will be regularly available about different contents and requested to be solved by the students.
Supervised projects	Supervised projects proposed by the teacher. They must include a theoretical abstract along with a list of solved problems on the corresponding issue.
Multiple-choice questions	Exam guided to assess the knowledge of the theoretical contents explained in the keynote speeches.

Personalized attention	
Methodologies	**Description**
Supervised projects Guest lecture / keynote speech Problem solving	Personalized attention is designed as work of the student face to face with the teacher, so the student involvement is assumed. The way and moment of these meetings will be designated during the course according to the subject work plan.

Assessment		
Methodologies	**Description**	**Qualification**
Supervised projects	Development of specific aspects with examples and solved problems. Competences A24, A27, B3 and C1 will be assessed.	10
Multiple-choice questions	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
Guest lecture / keynote speech	Questions to the students.	10
Problem solving	Delivery of exercises and solved exams from previous courses. Competences A15, A16, A20, A25, B1, B2, B6 and C3 will be assessed.	10
Others		

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 supervised projects nor 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	
Complementary	- (). .

Recommendations
Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Matemáticas 1/610G01001
Other comments
It would be advisable to have knowledge of Matemáticas 1. As far as the block of Statistics is concerned, it is highly recommended the active involvement in the practicals and seminars.

(*)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.