



Teaching Guide						
Identifying Data				2015/16		
Subject (*)	Matemáticas		Code	610G02003		
Study programme	Grao en Bioloxía					
Descriptors						
Cycle	Period	Year	Type	Credits		
Graduate	1st four-month period	First	FB	6		
Language	Spanish					
Teaching method	Face-to-face					
Prerequisites						
Department	Matemáticas					
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Web						
General description	esta asignatura pretende o desarrollo de competencias que permitan ao alumnado desarrollar un conocemento crítico do cálculo diferencial e integral así como unha pequena introducción ao alxebra lineal e as ecuacions diferenciais.					

Study programme competences	
Code	Study programme competences
A21	Deseñar modelos de procesos biolóxicos.
B1	Aprender a aprender.
B2	Resolver problemas de forma efectiva.
B3	Aplicar un pensamento crítico, lóxico e creativo.
B4	Traballar de forma autónoma con iniciativa.
B5	Traballar en colaboración.
B6	Organizar e planificar o traballo.
B7	Comunicarse de maneira efectiva nunha contorna de traballo.
B8	Sintetizar a información.
B9	Formarse unha opinión propia.
B10	Exercer a crítica científica.
B12	Adaptarse a novas situacions.
B13	Comportarse con ética e responsabilidade social como cidadán e como profesional.

Learning outcomes		
Learning outcomes	Study programme competences	



derivación e aplicacions da derivada	A21	B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B12 B13
integración e aplicacions da integral	A21	B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B12 B13
álgebra lineal e aplicacions	A21	B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B12 B13
ecuacions diferenciais e aplicacions	A21	B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B12 B13



Topic	Sub-topic
? Differentiation	<ul style="list-style-type: none">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	<ul style="list-style-type: none">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.
? Linear Algebra	<ul style="list-style-type: none">o Systems of Linear Equationso 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-Hamilton theorem.
? Ordinary Differential Equations.	<ul style="list-style-type: none">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	A21 B2 B3 B6 B13	32	64	96
Problem solving	A21 B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B12	8	18	26
Supervised projects	A21 B1 B2 B3 B8 B9 B10 B12 B13	8	16	24
Multiple-choice questions	B1 B2 B3 B4 B8 B9 B10 B13	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 ponderan se a disposición dos alumnos sobre distintos contidos 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	prueba orientada a evaluación dos contidos teóricos que se traballan nas sesions magistrales

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

Assessment			
Methodologies	Competencies	Description	Qualification
Guest lecture / keynote speech	A21 B2 B3 B6 B13	Questions to the students.	10
Multiple-choice questions	B1 B2 B3 B4 B8 B9 B10 B13	Test with 20 questions about Mathematics and 10 about Statistics, with 4 options, and for each 3 failed answers one correct answer will be eliminated. Competence C6 will be assessed.	70
Supervised projects	A21 B1 B2 B3 B8 B9 B10 B12 B13	Development of specific aspects with examples and solved problems. Competence B3 will be assessed.	10
Problem solving	A21 B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B12	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	- Alfonsa García (). Cálculo I. CLGSA - NEUHAUSER (2004). MATEMÁTICAS PARA CIENCIAS . Pearson - Bradley (). Cálculo. Prentice Hall - Salas / Hille / Etgen (). Cálculus. Reverté - Finney (). Cálculo. Addison-Wesley - Rogawski (2014). Cálculo, una variable. Editorial 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 bacharelato,

si non os ten; recomendase facer o curso de nivelación.&nbsp; &nbsp;

(*)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.