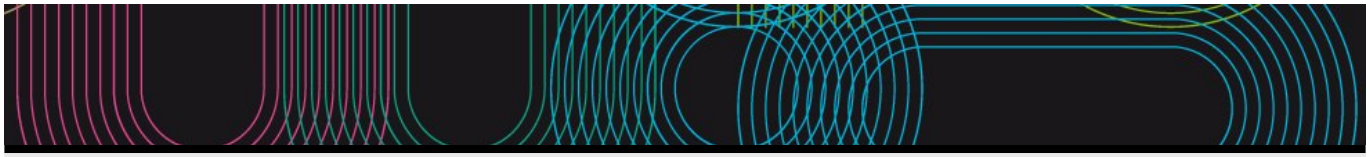

IDENTIFYING DATA				
(*)Matemáticas: Cálculo I				
Subject	(*)Matemáticas: Cálculo I			
Code	V05G300V01105			
Study programme	(*)Grao en Enxeñaría de Tecnoloxías de Telecomunicación			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	Spanish			
Department				
Coordinator	Calvo Ruibal, Natividad			
Lecturers	Calvo Ruibal, Natividad González Rodríguez, Ramón Prieto Gómez, Cristina Magdalena			
E-mail	nati@dma.uvigo.es			
Web	http://faitic.uvigo.es			
General description	The aim that pursue with this subject is that the student know the basic technicians of the differential calculation in one and several real variables and his applications. Al term of this subject it expects that the student have achieved the understanding of the basic concepts of the differential calculation in one and several variables, the handle of the usual differential operators of the mathematical physics and of the technicians of differential calculation for the research of extremes, local approximation of functions and numerical resolution of systems of equations. Besides, it will have to know handle some computer program of symbolic calculation and graphic representation.			

Competencies	
Code	
A3	CG3: The knowledge of basic subjects and technologies that capacitates the student to learn new methods and technologies, as well as to give him great versatility to confront and update to new situations
A4	CG4: The ability to solve problems with initiative, to make creative decisions and to communicate and transmit knowledge and skills, understanding the ethical and professional responsibility of the Technical Telecommunication Engineer activity.
A10	CE1/FB1: The ability to solve mathematical problems in Engineering. The aptitude to apply knowledge about linear algebra, geometry, differential geometry, differential and integral calculus, differential and partial derivatives equations; numerical methods, numerical algorithms, statistics and optimization

Learning aims	
Expected results from this subject	Training and Learning Results
FB1 Capacity for the resolution of the mathematical problems that can pose in the engineering. FB1.2 Aptitude to apply the knowledges on differential and integral calculation. FB1.4 Aptitude to apply the knowledges on numerical and algorithmic methods numerical.	A10
CG4 Capacity to resolve problems with initiative, takes of desisiones and creativity and capacity to communicate and transmit knowledges, skills and destrezas.	A4
CG3 Knowledge in basic matters that them capacite for the learning of new methods and theories, and endow them of versatilidad to adapt to new situations.	A3

Contents	
Topic	
Subject 1. Introduction.	Sets of numbers and functions of one variable. n-dimensional space. Polar, cylindrical and spherical coordinates.
Subject 2. Continuity of functions of one variable.	Limits. Continuity. Theorem of the intermediate value. Theorem of Bolzano. Method of bisection.

Subject 3. Continuity of functions of several variables.	Functions of several variables. Limits. Continuity. Theorem of Bolzano.
Subject 4. Derivation of functions of one variable.	Derivation of a function in a point. Derivative function, derivative successive, properties. Rule of the chain. Implicit derivation. Derivation of reverse functions.
Subject 5. Applications of the derivative.	Maxima and minimum. Theorem of the mean value. Rule of L'Hopital. Local study of the graphic of a function. Taylor polynomial. Method of Newton.
Subject 6. Differential of functions of several variables.	Directional derivatives. Partial derivatives. Jacobian matriz. Rule of the chain. Higher order derivatives. Differential operators.
Subject 7. Applications of the differential calculation.	Extreme values. Extreme values with equality constraints. Method of Newton.

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	38	66.5	104.5
Troubleshooting and / or exercises	10	14	24
Laboratory practises	2	1.5	3.5
Troubleshooting and / or exercises	4	8	12
Troubleshooting and / or exercises	2	4	6

*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 professor will expose the theoretical contents of the matter.
Troubleshooting and / or exercises	They will resolve problems and exercises of each one of the subjects and the student will have to resolve similar exercises.
Laboratory practises	They will use computer tools (Maxima and/or Matlab) to resolve exercises and apply the knowledges purchased in the theoretical classes.

Personalized attention

Methodologies	Description
Master Session	The professor will attend personally the doubts and queries of the students. They will attend doubts so much of form presencial, especially in the classes of problems and in the schedules of tutorías, as of form no presencial by means of electronic post. The students will have occasion of to go to tutorías in the dispatch of the professor in the time that the professors will establish to such effect to principle of course and that will publish in the page of the subject.
Troubleshooting and / or exercises	The professor will attend personally the doubts and queries of the students. They will attend doubts so much of form presencial, especially in the classes of problems and in the schedules of tutorías, as of form no presencial by means of electronic post. The students will have occasion of to go to tutorías in the dispatch of the professor in the time that the professors will establish to such effect to principle of course and that will publish in the page of the subject.
Laboratory practises	The professor will attend personally the doubts and queries of the students. They will attend doubts so much of form presencial, especially in the classes of problems and in the schedules of tutorías, as of form no presencial by means of electronic post. The students will have occasion of to go to tutorías in the dispatch of the professor in the time that the professors will establish to such effect to principle of course and that will publish in the page of the subject.

Assessment

	Description	Qualification
Troubleshooting and / or exercises	First session (1 hour): Subject 1. (Aprox. week 6). Second session (1 hour): Subjects 2 and 3. (Aprox. week 9). Third session (1 hour): Subjects 4 and 5. (Aprox. week 13). Fourth session (1 hour): Subject 6. (Aprox. week 15). The four previous sessions add 40% of the total note. The punctuation of each one of them will be of 10%.	40

Troubleshooting and / or exercises	Final examination on the subjects 1, 3, 6 and 7 of the matter. His punctuation will be 60% of the total note.	60

Other comments on the Evaluation

Following the own guidelines will offer two systems of evaluation: continuous evaluation and evaluation at the end of the term.

1. Evaluation continued will consider that a student has opted by continuous evaluation when, after having presented to the first session of continuous evaluation, deliver to the professor before 21 of October, the leaf of registration in this type of evaluation. Once expressed by writing his wish to take part, will not be able to change the option of evaluation. The continuous evaluation features of the four sessions that are presented in this guide and of the final examination. The sessions are not recoverable, that is to say, if a student can not present to realise them in the day stipulated by the professor, this does not have obligation to repeat them. Before the realisation of each session will indicate the date and procedure of review of the qualifications obtained that they will be public in a reasonable term of time (generally a week).

The final note of a student that do continuous evaluation will obtain by means of the formulae

N = (1/10) x C + (6/10) x E

C : Note, between 0 and 40, obtained like the sum of the notes of the sessions of an hour.

E : Note, between 0 and 10, obtained in the final examination on the subjects 1, 3, 6 and 7 of the matter.

In this modality, a student will be approved when N was main or equal than 5.The qualification obtained in the tasks evaluables will be valid so alone for the academic course in which realise .

2. Evaluation at the end of the cuatrimestre.

Students that do not follow continuous evaluation will be able to present to a final examination, that will not be necessarily the same that the one of the continuous evaluation, on all the subjects of the matter. The date of this examination will be the same in which will take place the final examination of the continuous evaluation. In this case, the examination will be evaluated between 0 and 10 points and a student will be approved when the note of his examination are main or equal than 5 .

3. Recovery in the month of July (second announcement)

The day of the examination of recovery, the students that chose continuous evaluation, will be able to opt, if they wish it, to an examination where the note obtain

NR= (1/10) x C (6/10) x D

C : Note, between 0 and 40, obtained like the sum of the notes of the sessions of an hour.

D : Note, between 0 and 10, obtained in an examination on the subjects 1, 3, 6 and 7 of the matter.

In this modality a student will be approved when NR was main or equal than 5.

In case of no choose this option, or of not being able to do it by have not followed continuous evaluation, the examination of recovery will be on all the contents of the matter and will be marked between 0 and 10. This examination will have a maximum length of three hours and will not be necessarily the same that the one of the continuous evaluation. A student will be approved when the note of his examination are main or equal than 5.

4. Note of No Presented

A student will consider no presented if, at most, has taken part in the first session of continuous evaluation. In any another case, the student will consider presented and will receive his corresponding note.

Sources of information

J. Stewart, **Cálculo de una variable**, 4ª edición,
D.G. Zill y W.S. Wright, **Cálculo de una variable**, 4ª edición,
E. Marsden y A.J. Tromba, **Cálculo vectorial**, 5ª edición,

Recommendations

Subjects that continue the syllabus

(*)Física: Análise de circuítos lineais/V05G300V01201
(*)Física: Campos e ondas/V05G300V01202
(*)Matemáticas: Cálculo II/V05G300V01203
(*)Matemáticas: Probabilidade e estatística/V05G300V01204
(*)Procesado dixital de sinais/V05G300V01304
(*)Transmisión electromagnética/V05G300V01303

Subjects that are recommended to be taken simultaneously

(*)Matemáticas: Álxebra lineal/V05G300V01104