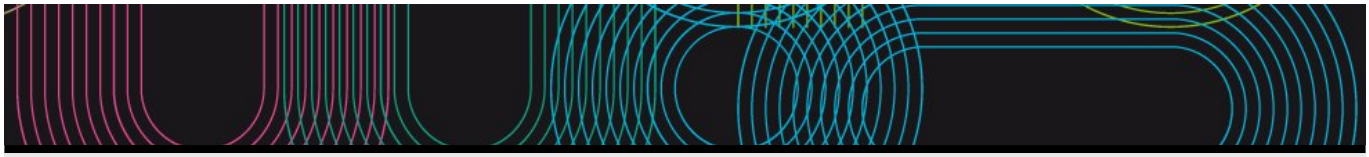

IDENTIFYING DATA				
(*)Métodos matemáticos aplicados á enxeñaria biomédica				
Subject	(*)Métodos matemáticos aplicados á enxeñaria biomédica			
Code	V04M192V01102			
Study programme	Máster Universitario en Ingeniería Biomédica			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	4.5	Mandatory	1st	1st
Teaching language				
Department				
Coordinator	Martínez Torres, Javier Fernández García, José Ramón			
Lecturers	Fernández García, José Ramón Martínez Torres, Javier			
E-mail	jose.fernandez@uvigo.es javidevigo@gmail.com			
Web				
General description				

Skills	
Code	
A5	Students must possess the learning skills that enable them to continue studying in a way that will be largely self-directed or autonomous.
B3	Knowledge in basic and technological subjects that will enable students to learn new methods and theories, and provide them the versatility to adapt to new situations.
C2	Ability to mathematically model Ability to mathematically model systems and processes complex in the field of biomedical engineering.systems and processes in the field of biomedical engineering.

Learning outcomes	
Expected results from this subject	Training and Learning Results
To know mathematical methods of application in the field of biomedical engineering	B3 C2
To apply mathematical methods in the field of biomedical engineering	A5 C2

Contents	
Topic	
Fourier Analysis	Introduction to Fourier Analysis
Extensions of Fourier Analysis to Biomedical Engineering	Introduction to Fourier Analysis in the field of Biomedical Engineering
Introduction to Partial Differential Equations	Introduction to classical problems Classification of the EDPs Variational Approach
Numerical Methods for the resolution of EDP in Biomedical Engineering	Introduction to Finite Elements Introduction to Finite Differences and Finite Volumes

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	14	16	30
Problem solving	8	16	24
Practices through ICT	14	20	34
Objective questions exam	2	0	2
Report of practices, practicum and external practices	0	20.5	20.5
Essay questions exam	2	0	2

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

Methodologies

	Description
Lecturing	In these sessions will develop those necessary theoretical concepts for the correct resolution of the problems of the Biomedical Engineering. They will carry out small exercises resolved that they allow to the student purchase the sufficient skills to be able to carry out to resolution of a real problem.
Problem solving	Solve practical problems
Practices through ICT	In the practices of laboratory will put in practical all the theoretical knowledges tackled, as well as the resolution of real practical cases, with the support of a computer software.

Personalized assistance

Assessment

	Description	Qualification	Training and Learning Results		
Objective questions exam	Examination of the first corresponding block to the subjects 1 and 2	30	A5	B3	C2
Report of practices, practicum and external practices	Report of practices with the resolution of a practical case by part of the student that evaluates all the block of practices of computer with the computer support	30	A5	B3	C2
Essay questions exam	Final examination where tackles all the content of the subject	40	A5	B3	C2

Other comments on the Evaluation

Sources of information

Basic Bibliography

A. Cañada, **Series de Fourier y aplicaciones**, Ediciones Pirámide, 2002

I. Peral, **Primer curso de Ecuaciones en Derivadas Parciales**, Addison-Wesley,, 1995

D. G. Zill y M. R. Cullen, **Ecuaciones Diferenciales**, McGraw-Hill, 2008

Complementary Bibliography

R. Churchil y J. Brown,, **Fourier series and boundary value problems**, McGraw Hill, 2008

L. Evans, **Partial Differential Equations**, Amer Math Soc, 2010

S. Larsson y V. Thomee, **Partial differential equations with numerical methods**, Springer, 2003

Recommendations

Other comments

It is recommended to make a review of the concepts tackled in Calculus subjects of first year of the Engineering degree, fundamentally the contents related with the Differential Equations.