Universida_{de}Vigo

Subject Guide 2023 / 2024

IDENTIEVIN	G DATA				
(*)Mótodos	matomáticos anlicados á onvoñ	aria hiomódica			
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 Lecturers E-mail Web General description Training an Code A5 Student directed B3 Knowley provide C2 Ability t	Fernández García, José Ramón Bazarra García, Noelia Fernández García, José Ramón jose.fernandez@uvigo.es d Learning Results s must possess the learning skills th d or autonomous. dge in basic and technological subje them the versatility to adapt to new to mathematically model Ability to m	nat enable them to cts that will enable v situations. nathematically mod	continue studying e students to learn del systems and pri biomedical engine	in a way that w new methods a occesses comple	rill be largely self- nd theories, and ex in the field of
bioineu	ical engineering.systems and proces			enng.	
Expected res Expected res To know mat	esults from this subject sults from this subject chematical methods of application in	the field of biome	dical engineering		Training and Learning Results B3 C2
New To apply ma	thematical methods in the field of bi	omedical engineer	ing		A5 C2
Contents Topic					
Fourier Analy	/sis	Introduction to F	ourier Analysis		
Extensions o Engineering	f Fourier Analysis to Biomedical	Introduction to Fe	ourier Analysis in t	he field of Biom	edical Engineering
Introduction	to Partial Differential Equations	Introduction to cl Classification of t Variational Appro	assical problems he EDPs bach		
Numerical M	ethods for the resolution of EDP in	Introduction to Fi	inite Elements	nd Finite Volum	
Diometrical E	nymeenny	Incroduction to F	inite Differences a	na Finite volume	5 3

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 extern	nal practices 0	20.5	20.5
Essay questions exam	2	0	2
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*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	Т	rainin	g and
			Lea	rning	Results
Objective questions exam	Examination of the first corresponding block to the subjects 1 and	30 /	A5	B3	C2
	2				
Report of practices,	Report of practices with the resolution of a practical case by part	30	A5	B3	C2
practicum and external	of the student that evaluates all the block of practices of				
practices	computer with the computer support				
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.