Course: 2024 / 2025 - Course planning

Goi Eskola Politeknikoa Escuela Politécnica Superior

	04] Mathematical Me	thoas Applied	to Engine	eerin	g		
	GENERAL	INFORMATION					
Studies ENGINEERING	PHYSICS APPLIED TO	Subject	Mathematics				
INDUSTRY Semester 1	Course 2	Mention / Field of					
Character COMPULSORY		specialisation					
Plan 2022	Modality Face-to-face		EUSKARA/EN	IGLISH			
Credits 6	Hours/week 0	•••	90 class hours		on-cla	ss hours =	150 tot
			<u>hours</u>				
	2030 AGE	NDA GOALS					
TY ATION 8 DECENT WORK AND 9 NOUSTIK (NOVATION ATION) AND MERSITIK THE							
	PROF	ESSORS					
AGUIRRE ALONSO, MIKEL							
TELLERIA ALLIKA, XABIER							
	REQUIRED PRE	/IOUS KNOWLED	GE				
Subj	ects		Knov	vledge			
ALCULUS I		(/	No previous kno	owledge	e requi	ired)	
ALCULUS II							
	LEARNIN	IG RESULTS		кс	CK/	48	FOTO
EARNING RESULTS TR102 - Solving any mathematica	l problems that may arise in eng	neering. Aptitude in apr	olvina		SK x	AB	5,4
owledge of: differential equations RTR1 - To develop interdisciplina					x		0,24
ecoming aware of respect for hum	nan rights and fundamental rights				^		0,24
pact of the proposed solutions or	nan rights and fundamental rights n the SDGs - to acquire and/or a	s, and analyzing and as oply basic, advanced ar	sessing the nd/or		^		0,24
pact of the proposed solutions or ant-garde, demonstrating the abi	nan rights and fundamental rights n the SDGs - to acquire and/or a	s, and analyzing and as oply basic, advanced ar	sessing the nd/or		^		0,24
pact of the proposed solutions or rant-garde, demonstrating the abi th a high degree of autonomy RTR2 - To express information, ic	nan rights and fundamental rights in the SDGs - to acquire and/or a ility to work in multidisciplinary te deas and the arguments that sup	and analyzing and assopply basic, advanced ar ams and/or undertake from an orderly,	sessing the nd/or urther studies clear and		x		0,24
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1RGF294 [!] (1 sem)Realiza una presentación oral del proyecto con argumentos elaborados por sí mismos y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje.

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Presentation by the teacher in the classroom, in participatory classes, of concepts and

procedures associated with the subjects

Course: 2024 / 2025 - Course planning

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LEARNING ACTIVITIES			СН	NCH	ТН
	(No a	ctivities)	-		
EVALUATION SYSTEM	W	MAKE-UP MECHANISI	MS		
(No system)			(No mech	anisms)	
:H - Class hours: h. ICH - Non-class hours: h. IH - Total hours: h.					
	ndamentales del nlano d	omnleio y las funciones	definidas	en él, así com	
RGF206 [!] Conoce las propiedades fui récnicas para la resolución de problema		iomplejo y las funciones (io las diferer
		omplejo y las funciones (io las diferer
écnicas para la resolución de problema					
			СН	лсн	тн
écnicas para la resolución de problema	s.		СН	<u>NCH</u> 5 h.	
LEARNING ACTIVITIES Conducting tests, giving presentations, pro	s. esenting defences, taking /cases, etc. to provide so	examinations and/or doing	СН		тн

EVALUATION SYSTEM W		MAKE-UP MECHANISMS				
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	10%	Individual written and/or oral tests or individual coding/programming tests				
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	20%					
Individual written and/or oral tests or individual coding/programming tests	70%					

1RGF291 (1 sem)					
LEARNING ACTIVITIES		СН	NCH	ТН	
Carrying out/resolving projects/challenges/cases, etc. to p interdisciplinary contexts, real and/or simulated, individua EVALUATION SYSTEM		SMS	4 h.	4 h.	
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%	 (No mech	anisms)		
CH - Class hours: 0 h. NCH - Non-class hours: 4 h. TH - Total hours: 4 h.					

RGF205 [!] Identifica y modeliza diferentes tipos de ecuaciones diferenciales y sistemas de ecuaciones diferenciales para la resolución de problemas físicos e ingenieriles mediante diversas técnicas y sabe utilizar las transformadas de Laplace y Fourier.



LEARNING ACTIVITIES			СН	NCH	ТН
Conducting tests, giving presentations, presenting defer checkpoints	ices, taking	examinations and/or do	ing	5 h.	5 h.
Carrying out/resolving projects/challenges/cases, etc. to interdisciplinary contexts, real and/or simulated, individu	•	•		8 h.	8 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects			40 h.		40 h.
Carrying out exercises and solving problems individually	and/or in t	eams	12 h.	15 h.	27 h.
EVALUATION SYSTEM	W	MAKE-UP MECHAN	IISMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%	Individual written and/or oral tests or individual coding/programming tests			
Presentation and defence of exercises, case studies,	30%				
computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems					

1RGF293 (1 sem)					
LEARNING ACTIVITIES			СН	NCH	TH
Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams				3 h.	3 h.
EVALUATION SYSTEM	W	MAKE-UP MECHAN	ISMS		
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	100%		(No mech	anisms)	
CH - Class hours: 0 h. NCH - Non-class hours: 3 h. TH - Total hours: 3 h.					

1RGF290 (1 sem)						
LEARNING ACTIVITIES				NCH	ТН	
Carrying out/resolving projects/challenges/cases, etc. to prointerdisciplinary contexts, real and/or simulated, individually	2 h.	2 h.	4 h.			
EVALUATION SYSTEM	W	MAKE-UP MECHAN	SMS			
Self-assessment	25%		(No mech	anisms)		
Co-assessment	25%					
Observation (technical capacity, attitude and participation)	50%					
CH - Class hours: 2 h. NCH - Non-class hours: 2 h. TH - Total hours: 4 h.						

CONTENTS



Course: 2024 / 2025 - Course planning

- 1. Complex Analysis
- Complex functions. Differentiation and Cauchy-Riemann equations.
- Complex integration.
- Cauchy's integral formulas.
- Meromorphic functions and the residue theorem.
- Laurent series.
- 2. Ordinary Differential Equations
- Higher order ODE's.
- ODE systems.
- Laplace and Fourier Transforms.
- Sturm-Liouville problems.
- Series solutions.
- Numeric methods, introduction.

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

https://labur.eus/Cq5w9

Bibliography

Subject notes Moodle Platform