

Course: 2023 / 2024 - Course planning

Goi Eskola Politeknikoa Escuela Politécnica

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		IPUTE	K ARCHITEC	TURE				
	GENE	RAL INI	ORMATION					
Studies DEGREE IN CO	MPUTER ENGINEERING		Subject	COMPUTER E	ENGINE	ERIN	G	
Semester 1	Course 2		Mention / Field of					
Character COMPULSORY			specialisation					
Plan 2022	Modality Face-	to-face	Language	CASTELLANC)/EUSKA	RA		
Credits 6	Hours/week 5.33		Total hours	96 class hours	s + 54 no	n-clas	ss hours =	= <u>150 tota</u>
				nours				
	ł	PROFES	SORS					
GARRO ARRAZOLA, UNAI								
MARTINEZ DE MENDIVIL V	ARAS, JON							
	REQUIRED	PREVIC		GE				
Subj	ects			Know	ledge			
(No specific previous	s subjects required)		(/\	lo previous kno	owledge	requi	red)	
	LEA	RNING	RESULTS					
EARNING RESULTS					КС	SK	AB	ECTS
R205 - To analyze the structure a	nd architecture of compute	ers, as we	Il as the basic compo	onents that			x	5,4
RTR1 - To develop interdisciplina	ry projects specific to their	- specialty	and of gradual comp	olexity, -		x		0,32
ecoming aware of respect for hum	an rights and fundamenta	l rights, ai	nd analyzing and ass	essing the				
pact of the proposed solutions or	the SDGs - to acquire an	d/or apply	basic, advanced and	d /or				
th a high degree of autonomy	lity to work in multidisciplir	hary teams	s and/or undertake tu	rther studies				
•RTR2 - To express information, ic	leas and the arguments th	at suppor	t them in an orderly, o	clear and		x		0,28
pherent manner, orally and in writi	ng, based on quality inforr	mation, se	If-made or obtained f	rom different				
burces, using inclusive and non-di	scriminatory language							
							Total:	6
C: Knowledge or Content / SK: Skills / AB:	Abilition							
	SECONDAR	RY LEA	RNING RESULT	S			-	
RGI290 [!] Proponer los objeti ecnologías propias de su espe aprendiz	SECONDAR	RY LEA	RNING RESULT ecto que le permita a o a la vanguardia de	S adquirir y/o re I conocimient	forzar lo to- y def	os co ïnir u	nocimier na estrat	ntos de regía de
RGI290 [!] Proponer los objeti tecnologías propias de su esper aprendiz LEARNING ACTIVITIES	SECONDAR	RY LEA	RNING RESULT	S adquirir y/o re l conocimient CH	forzar k to- y def N	os co inir u CH	nocimien na estrat TH	ntos de regía de
RGI290 [!] Proponer los objeti ecnologías propias de su espera prendiz LEARNING ACTIVITIES Carrying out/resolving projects/c interdisciplinary contexts, real an	SECONDAR vos y la planificación de cialidad,- que en ocasion hallenges/cases, etc. to pr id/or simulated, individuall	and the solution of the soluti	RNING RESULT	S adquirir y/o re ch conocimient CH 3 h.	forzar k to- y def <u>N</u>	os co ïnir u CH h.	nocimien na estrat TH 4 h	ntos de legía de
RGI290 [!] Proponer los objeti ecnologías propias de su esper aprendiz LEARNING ACTIVITIES Carrying out/resolving projects/ct interdisciplinary contexts, real an EVALUATION SYSTEM	SECONDAR vos y la planificación de cialidad,- que en ocasion hallenges/cases, etc. to pr id/or simulated, individuall	rovide solu y and/or in	RNING RESULT ecto que le permita a la la vanguardia de utions to problems in teams MAKE-UP MECH/	S adquirir y/o re l conocimient CH 3 h. ANISMS	forzar k to- y def <u>N</u>	os co inir u сн h.	nocimien na estrat TH 4 h	ntos de legía de
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RCI291 [!] Establecer las responsabilidades de los miembros del equipo utilizando técnicas adecuadas para fomentar la eficiencia del equipo para el desarrollo del proyecto en los plazos establecidos (compartir recursos, aportar ideas, habilidades comunicativas

LEARNING ACTIVITIES			СН	NCH	ТН
Carrying out/resolving projects/challenges/cases, etc. to p interdisciplinary contexts, real and/or simulated, individual	provide sol Ily and/or i	utions to problems in in teams	3 h.	1 h.	4 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANI	SMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%		(No mech	anisms)	
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	50%				
Prototype / Product	30%				
Comments: Continuous assessment.					
CH - Class hours: 3 h. NCH - Non-class hours: 1 h. TH - Total hours: 4 h.					
LEARNING ACTIVITIES			СН	NCH	TH
projects/work experience/challenges/case studies/experin individually and/or in teams	nental inve	estigations carried out	511.	111.	4 11.
EVALUATION SYSTEM	W	MAKE-UP MECHANI	SMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%		(No mech	anisms)	
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	50%				
Prototype / Product	30%				
Comments: Continuous assessment. It may be asked to document.	redo the				
CH - Class hours: 3 h. NCH - Non-class hours: 1 h. TH - Total hours: 4 h.					

RGI294 [!] Realiza una presentación oral del proyecto con argumentos elaborados por sí mismos y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje

LEARNING ACTIVITIES			СН	NCH	тн
Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams	ns, audiovi mental invo	sual material, etc. on estigations carried out	2 h.	1 h.	3 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANI	SMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%		(No mech	anisms)	
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	50%				
Prototype / Product	30%				

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Comments: Continuous assessment.

CH - Class hours: 2 h. NCH - Non-class hours: 1 h. TH - Total hours: 3 h.

RGI211 [!] Conoce la arquitectura interna de un microprocesador y es capaz de desarrollar aplicaciones mediante las herramientas pertinentes para un microcontrolador específico, siendo capaz de combinar lenguaje ensamblador con un lenguaje de alto nivel como C LEARNING ACTIVITIES СН NCH ΤН Conducting tests, giving presentations, presenting defences, taking examinations and/or doing 2 h. 2 h checkpoints 8 h. 5 h. 13 h. Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects 23 h. 15 h. 38 h. Carrying out exercises and solving problems individually and/or in teams w **EVALUATION SYSTEM** MAKE-UP MECHANISMS Individual written and/or oral tests or individual 100% Individual written and/or oral tests or individual coding/programming tests coding/programming tests Comments: Students with less than 5 in the Control point must Comments: Minimum grade: 5 retake the exam. Control point value will be 25% and retake 75%. CH - Class hours: 33 h. NCH - Non-class hours: 20 h. TH - Total hours: 53 h.

RGI212 [!] Conoce los mecanismos genéricos de interrupciones, relojes y mapeos de periféricos en memoria y es capaz de emplearlos en periféricos específicos como GPIO, UART, I2C, etc

LEARNING ACTIVITIES	СН	NCH	ТН
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.		2 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	8 h.	4 h.	12 h.
Carrying out exercises and solving problems individually and/or in teams	18 h.	12 h.	30 h.
Practical work in workshops and/or laboratories, individually and/or in teams	5 h.	3 h.	8 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and/or oral tests or individual coding/programming tests	80%	Individual written and/or oral tests or individual coding/programming tests
Prototype / Product Comments: Minimum grade: 5	20%	Comments: Students with less than 5 in the Control point must retake the exam. Control point value will be 25% and retake 75%.

CH - Class hours: 33 h. NCH - Non-class hours: 19 h.

TH - Total hours: 52 h.

RGI213 [!] Es capaz de emplear de forma crítica un sistema basado en un microcontrolador en un contexto interdisciplinar

LEARNING ACTIVITIES	СН	NCH	ТН	
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out	4 h.	2 h.	6 h.	
individually and/or in teams				

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uela Politécnica erior Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in

Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in 15 h. 9 h. 24 h. interdisciplinary contexts, real and/or simulated, individually and/or in teams					24 h.
EVALUATION SYSTEM	w	MAKE-UP MECHANI	SMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%	Comments: Project: 7 defense.	<i>(No mecha</i> There will not	anisms) be any retak	e of the individual
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	50%				
Prototype / Product	30%				
Comments: Minimum grade: 5 Project evaluation based on technical rubric	1				
CH - Class hours: 19 h. NCH - Non-class hours: 11 h. TH - Total hours: 30 h.					

CONTENTS

1. Introduction 1.1 What is a microcontroller? 1.2 Microcontroller families 1.3 Uses 1.4 Elec tronic circuit boards: Analysis of its design and peripherals2. Structure and operation of microcontrolle 2.1 Microcontroller structure 2.2 Machine language 2.3 Subroutines and Stack 2.4 Interface rs between machine language and high-level languages.3. Peripheral devices 3.1 Memory Map and Peripheral 3.2 Clock system 3.3 Two basic peripherals: GPIO, time counters 3.4 Interrupts and exceptions4 s 4.2 ADC and DAC . Advanced peripherals 4.1 Serial line 4.3 RTOS

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Subject notes	https://labur.eus/biblio-GIG303
Moodle Platform	

Moodle Platform Specific Master Software