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[0	GEJ301] BASIC INDU	STRIAL AUTO	DMATION				
	GENERAL IN	FORMATION					
Studies DEGREE IN INDU ENGINEERING	JSTRIAL ELECTRONICS	Subject	TOOLING, AU	TOMA	TION A	AND CON	ITROL
Semester 2	Course 2	Mention / Field of					
Character COMPULSORY		specialisation					
Plan 2022	Modality Face-to-face	Language	EUSKARA/CA	STELL	ANO		
Credits 4,5	Hours/week 3.95	lotal nours	total hours	urs + 4	1.48 h	on-class i	nours =
	2030 AGEN	DA GOALS					
NEXTAND D INSTITUTION							
	PROFE	SSORS					
ZALDIBIA GARATE, JOSEBA	EDORTA						
AZKARATE FERNANDEZ, IG	OR						
Outrie			GE				
(No specific previous	cts subjects required)	()	No previous kno	wieda	e requi	red)	
(NO Specific previous			to previous kite	meag	o regui	icu)	
ARNING RESULTS	LLARNING	RESOLIS		кс	SK	AB	ECTS
R210 - To know the fundamentals	of automation and control method	ds; automations		x			4,02
RTR2 - To express information, ide herent manner, orally and in writin urces, using inclusive and non-dis	eas and the arguments that supporting, based on quality information, secriminatory language	rt them in an orderly, elf-made or obtained t	clear and from different		x		0,16
N Knowladza az Cantant / SK: Skilla / AB: /						Total:	4,5
	Admities						
<b>NATURE LEARNING RESOLTS</b> <b>NA102</b> - Knowledge and comprehe eccessary to acquire the rest of the	ension: Knowledge and comprehen competencies of the degree, inclu	nsion of the engineeri	ng disciplines o test advances.	f their	special	lity, at the	level
NA105 - Analysis in engineering: T dequately established analytical, c nvironmental, economic, and indus	he ability to identify, formulate and alculation and experimental methors strial restrictions.	l solve engineering pr ods; and acknowledge	roblems in their e the importanc	specia e of so	ility; ch cial, he	oose and alth and s	apply safety,
NA106 - Engineering projects: Abili rocesses and systems of their spen invironmental, economic and indus	ity to project, design and develop of ciality, which meet the established trial aspects, as well as selecting a	complex products (pa requirements, includ and applying appropri	rts, component ing awareness iate project met	s, finisl of the s hods.	hed pro social,	oducts, et health an	c.), d safety
NA109 - Research and innovation:	Ability to consult and apply codes	of good practice and	security in thei	r speci	ality.		
<b>NA110</b> - Research and innovation:	Capacity and ability to project and	I carry out experimen	tal investigatior	is, inte	rpret re	esults, and	d reach
inclusions in their neid of study.						noorina n	• •
<ul> <li>NA112 - Practical application of en- onduct investigations specific to the</li> </ul>	gineering: Practical competency to eir speciality.	o solve complex probl	ems, carry out	comple	ex engi	neening p	rojects,
NA112 - Practical application of en- onduct investigations specific to the NA113 - Practical application of en- rocesses, and their limitations in the	gineering: Practical competency to eir speciality. gineering: Knowledge of applicatio ne field of their speciality.	o solve complex probl	ems, carry out ment and tools,	comple engine	ex engineering t	technolog	rojects, and
NA112 - Practical application of en- onduct investigations specific to the NA113 - Practical application of en- rocesses, and their limitations in the NA114 - Practical application of en-	gineering: Practical competency to eir speciality. gineering: Knowledge of applicatio he field of their speciality. gineering: Ability to apply standard	o solve complex probl on of materials, equip ds of engineering prac	ems, carry out ment and tools, ctice in their spe	comple engine eciality	ex engineering t	technolog	rojects, and
NA112 - Practical application of en- onduct investigations specific to the NA113 - Practical application of en- ocesses, and their limitations in the NA114 - Practical application of en- NA117 - Preparation of judgements ake judgements that involve reflect	gineering: Practical competency to eir speciality. gineering: Knowledge of applicatio he field of their speciality. gineering: Ability to apply standard s: Ability to collect and interpret data ction on ethical and social issues.	o solve complex probl on of materials, equip ds of engineering prac ta and handle comple	ems, carry out ment and tools, ctice in their spe ex concepts with	comple engine eciality. hin the	ex enginering the speci	technolog	rojects, ly and rder to
NA112 - Practical application of en- onduct investigations specific to the NA113 - Practical application of en- rocesses, and their limitations in the NA114 - Practical application of en- NA117 - Preparation of judgements ake judgements that involve reflect NA118 - Preparation of judgements sponsibility for decision making.	gineering: Practical competency to eir speciality. gineering: Knowledge of applicatio he field of their speciality. gineering: Ability to apply standard s: Ability to collect and interpret dat ction on ethical and social issues. s: Ability to manage complex techn	o solve complex probl on of materials, equip ds of engineering prac ta and handle comple nical or professional a	ems, carry out ment and tools, ctice in their spe ex concepts with activities or proje	comple engine eciality hin the ects of	eering t ir speci their sp	technolog iality, in or peciality, f	rojects, ly and rder to taking

**RGE223** [!] Diseña y desarrolla el programa de un dispositivo de control programable (relé o autómata), según la normativa sobre lenguajes de programación IEC-61131-3, para implementar y poner en marcha un sistema automático secuencial según las especificaciones

LEARNING ACTIVITIES

[GEJ301] BASIC INDUSTRIAL AUTOMATION

NCH

ΤН

СН



## Goi Eskola Politeknikoa | Mondragon Unibertsitatea

Course: 2024 / 2025 - Course planning



Conducting tests, giving presentations, presenting defend checkpoints	ces, taking	g examinations and/or doing	2 h.		2 h.	
Computer simulation exercises, individually and/or in tea	ms		12 h.	8,5 h.	20,5 h.	
Presentation by the teacher in the classroom, in participa procedures associated with the subjects	tory class	es, of concepts and	10 h.		10 h.	
Carrying out exercises and solving problems individually	and/or in	teams	8 h.	10 h.	18 h.	
EVALUATION SYSTEM	w	MAKE-UP MECHANIS	MS			
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	25%	Individual written and/or coding/programming tes Comments: - Students	oral tests sts with less th	or individual	control point mus	st
Individual written and/or oral tests or individual coding/programming tests	75%	retake the exam Final r and retake 75%.	note of the	control point: c	control point 25%	)
<b>Comments:</b> - Control point: minimum grade 5 Coursew minimum grade 5.	orks:					
CH - Class hours: 32 h. NCH - Non-class hours: 18,5 h. TH - Total hours: 50,5 h.						

EARNING ACTIVITIES			СН	NCH	тн
Carrying out/resolving projects/challenges/cases, etc. to pro nterdisciplinary contexts, real and/or simulated, individually	ovide solu and/or in	utions to problems in n teams	1,34 h.	,66 h.	2 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANI	SMS		
	-		(1)		
Observation (technical capacity, attitude and participation)	100%		(No mecha	nisms)	

TH - Total hours: 2 h.

#### 2RGE293 (2 sem)

		СН	NCH	ТН
ons, audiovi rimental inv	sual material, etc. on estigations carried out	1,34 h.	,66 h.	2 h.
W	MAKE-UP MECHANI	SMS		
100%	Reports on the completion of exercises, case studies, compute exercises, simulation exercises, laboratory exercises, term projects, challenges and problems <b>Comments:</b> - Continuous assessment It may be asked to rette document.			
	ons, audiovi rimental invo <u>W</u> 100%	ons, audiovisual material, etc. on rimental investigations carried out <u>W</u> 100% MAKE-UP MECHANI Reports on the comple exercises, simulation projects, challenges a Comments: - Continu the document.	CH         ons, audiovisual material, etc. on rimental investigations carried out       1,34 h.         W       MAKE-UP MECHANISMS         100%       Reports on the completion of exercises, simulation exercises, lat projects, challenges and problems         Comments: - Continuous assessment the document.	CH     NCH       ons, audiovisual material, etc. on rimental investigations carried out     1,34 h.     ,66 h.       W     MAKE-UP MECHANISMS       100%     Reports on the completion of exercises, case stu exercises, simulation exercises, laboratory exerci- projects, challenges and problems     Comments: - It may be the document.

**RGE224** [!] Planifica e implementa soluciones técnicas básicas, elabora la documentación asociada y defiende sus conocimientos en el campo de la automatización industrial



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# Goi Eskola Politeknikoa | Mondragon Unibertsitatea Course: 2024 / 2025 - Course planning



LEARNING ACTIVITIES			СН	NCH	ТН
Carrying out work experience in real environments and w	riting the	corresponding report	13 h.	9 h.	22 h.
EVALUATION SYSTEM	w	MAKE-UP MECHANIS	SMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%	Prototype / Product Comments: - In the pr the individual defense.	roject / PBL t	here will not b	e any retake of
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%				
<b>Comments:</b> - PBL project grade: 30% product, 20% technicontent of the report and 50% individual technical defense.	nical				
CH - Class hours: 13 h. NCH - Non-class hours: 9 h. TH - Total hours: 22 h.					

2RGE291 (2 sem)					
LEARNING ACTIVITIES			СН	NCH	тн
Carrying out/resolving projects/challenges/cases, etc. to pro interdisciplinary contexts, real and/or simulated, individually	ovide sol / and/or i	utions to problems in n teams	2 h.	1 h.	3 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANI	SMS		
Observation (technical capacity, attitude and participation)	100%		(No mech	anisms)	
		Comments: Continuo	us assessm	ent.	
CH - Class hours: 2 h. NCH - Non-class hours: 1 h. TH - Total hours: 3 h.					

2RGE294 (2 sem)					
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, audiovis mental inve	sual material, etc. on estigations carried out	1,34 h.	,66 h.	2 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANI	SMS		
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 CH - Class hours: 1,34 h. NCH - Non-class hours: ,66 h. TH - Total hours: 2 h.	100%	Presentation and defe practical work, simulat term projects, end of d and problems <b>Comments:</b> - Continue	nce of exercis ion practical v legree project	ses, case stud work, laborato , master's the ent.	Jies, computer ory practical work, asis, challenges
<b>RGE222</b> [!] Diseña en un entorno CAD, utilizando sim cableados o programados consistentes en los circuito	nbología y s necesar	normas de representac ios, catálogo propio, im	ión estánda forme, presu	r, automatisr puesto y arn	nos eléctricos nario eléctrico
LEARNING ACTIVITIES			СН	NCH	ТН



## Goi Eskola Politeknikoa | Mondragon Unibertsitatea

Course: 2024 / 2025 - Course planning



Conducting tests, giving presentations, presenting defend checkpoints	es, taking	g examinations and/or doing	2 h.		2 h.
Presentation by the teacher in the classroom, in participat procedures associated with the subjects	tory class	es, of concepts and	6 h.		6 h.
Carrying out exercises and solving problems individually a	and/or in	teams	10 h.	10 h.	20 h.
EVALUATION SYSTEM	w	MAKE-UP MECHANIS	MS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	15%	Individual written and/o coding/programming te Comments: - Students	r oral tests sts with less th	or individual an a 5 at the o	control point must
Individual written and/or oral tests or individual coding/programming tests	85%	retake the exam Final and retake 75%.	note of the o	control point: c	control point 25%
<b>Comments:</b> - Control point: minimum grade 5 Coursew minimum grade 5.	orks:				
CH - Class hours: 18 h. NCH - Non-class hours: 10 h. TH - Total hours: 28 h.					

2RGE290 (2 sem)

EARNING ACTIVITIES			СН	NCH	тн
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams			2 h.	1 h.	3 h.
nterdisciplinary contexts, real and/or simulated, individually	and/or i	n teams			
terdisciplinary contexts, real and/or simulated, individually VALUATION SYSTEM	v and/or i W	n teams MAKE-UP MECHANI	SMS		
<ul> <li>interdisciplinary contexts, real and/or simulated, individually</li> <li>iVALUATION SYSTEM</li> <li>ibservation (technical capacity, attitude and participation)</li> </ul>	r and/or i <b>W</b> 100%	n teams <u>MAKE-UP MECHANI</u> Observation (technica	SMS I capacity, at	titude and par	ticipation)

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

### CONTENTS

Electrical automation- Switchgear- Dimensioning, handling commercial catalogs- Development of electrical diagrams in CAD environment (EPLAN Electric)Programmable controllers- Preliminary concepts- Programming e nvironment (Siemens TIA Portal)- Programming by means of ladder diagrams- GRAFCET methodology- Graphical programming

Learning resources	Bibliography
Moodle Platform	Mandado, Enrique; Acevedo, Jorge Marcos; Fernández, Celso.
Labs	Autómatas programables y sistemas de automatización (2 ed).
	Marcombo. Barcelona. 2009. ISBN: 9788426715753