

Goi Eskola Politeknikoa Escuela Politécnica

IGJ	81031 ADVANCED IN				
		DUSTRIAL AU	JIOMATIC	N	
	GENERAL IN	FORMATION			
Studies DEGREE IN MEC	CHATRONICS ENGINEERING	Subject	?		
Semester 1	Course 4	Mention / Field of			
Character COMPULSORY		specialisation			
Plan 2020	Modality Adapted Face-to-face	Language	ENGLISH		
Credits 4,5	Hours/week 3.75	Total hours	67.5 class hour hours	s + 45 non-clas	ss hours = <u>112.5</u>
	PROFE	SSORS			
GOMEZ DIEZ, CARLOS PED	DRO				
AZKARATE FERNANDEZ, IG	GOR				
AZURMENDI URTEAGA, AS	IER				
POGGI, TOMASO					
	REQUIRED PREVI	OUS KNOWLED	GE		
Subje	ects		Knowl	edge	
RODUCTION TO AUTOMATION	١	(1	Vo previous know	wledge require	d)
	SK	LLS			
PECIFIC					
JCE18 - Ability to design control sy	ystems and industrial automation				
ENERAL					
JCG03 - Addressing and optimisin	g activities of assembly, commiss	ioning, assistance and	d maintenance o	f facilities, mac	hinery, and
dustrial mechatronic systems					
JCG06 - Implement and materializ					
	e projects of automation and cont	rol of equipment, proc	esses and flexib	le industrial sy	stems, through th
tegration of hardware and softwar	e projects of automation and cont re in order to optimize the operation	rol of equipment, proc on of the different units	esses and flexib that make up th	le industrial synetrial synetrial synetrial synetria in the system to manual system to manual system to manual s	stems, through the stems and the stems of the steed structure str
tegration of hardware and softwar e productive sector	e projects of automation and cont re in order to optimize the operation	rol of equipment, proc on of the different units	esses and flexib that make up th	le industrial syne the system to m	stems, through tl eet the needs of
tegration of hardware and softwar e productive sector ASIC	e projects of automation and cont re in order to optimize the operation	rol of equipment, proc on of the different units	esses and flexib that make up th	le industrial syne and system to m	stems, through tl eet the needs of
tegration of hardware and softwar e productive sector ASIC _ CB1 - To have proven to underst	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field	rol of equipment, proc on of the different units d of study based on ge	esses and flexib that make up th eneral secondary	le industrial syne system to m	stems, through the eet the needs of a level found in
tegration of hardware and softwar e productive sector ASIC _ CB1 - To have proven to underst Jvanced textbooks and including of	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field	rol of equipment, proc on of the different units d of study based on ge eld of study.	esses and flexib s that make up th eneral secondary	le industrial syne system to m v education at a	stems, through the eet the needs of a level found in
tegration of hardware and softwar e productive sector ASIC _CB1 - To have proven to underst dvanced textbooks and including o	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their fin LEARNING	rol of equipment, proc on of the different units d of study based on ge eld of study. B RESULTS	esses and flexib s that make up th eneral secondary	le industrial sy le system to m / education at a	stems, through tl eet the needs of a level found in
tegration of hardware and softwar e productive sector ASIC _CB1 - To have proven to underst dvanced textbooks and including o	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC	rol of equipment, proc on of the different units d of study based on ge eld of study. BRESULTS	esses and flexib s that make up th eneral secondary	le industrial sy le system to m / education at a	stems, through the eet the needs of a level found in
tegration of hardware and software e productive sector ASIC _CB1 - To have proven to underst Ivanced textbooks and including o	te projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their fin LEARNINC	rol of equipment, proc on of the different units d of study based on ge eld of study. B RESULTS	esses and flexib that make up th eneral secondary	le industrial sy le system to m / education at a	stems, through t eet the needs of a level found in
RGJ407 They understand the in	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC	rol of equipment, proc on of the different units d of study based on ge eld of study. B RESULTS	esses and flexib s that make up th eneral secondary	e industrial sy e system to m education at a	stems, through t eet the needs of a level found in dustrial
RGJ407 They understand the in ommunication	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC	rol of equipment, proc on of the different units d of study based on ge eld of study. B RESULTS	esses and flexib s that make up th eneral secondary	e industrial sy e system to m education at a concepts of ind	stems, through t eet the needs of a level found in dustrial
egration of hardware and software e productive sector ASIC CB1 - To have proven to underst ivanced textbooks and including of RGJ407 They understand the in ommunication	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC	rol of equipment, proc on of the different units d of study based on ge eld of study. BRESULTS	esses and flexib that make up th eneral secondary	e industrial syne system to m e ducation at a	stems, through t eet the needs of a level found in dustrial
egration of hardware and software e productive sector ASIC CB1 - To have proven to underst wanced textbooks and including of RGJ407 They understand the in ommunication	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC	rol of equipment, proc on of the different units d of study based on ge eld of study. BRESULTS	esses and flexib a that make up th eneral secondary cols and basic of <i>CH</i>	Ne industrial sy the system to m we ducation at a concepts of ind NCH	stems, through the eet the needs of a level found in dustrial
egration of hardware and software e productive sector ASIC CB1 - To have proven to underst lvanced textbooks and including of RGJ407 They understand the in ommunication LEARNING ACTIVITIES Individual study and work, tests a	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC Industrial networks, fieldbus, co	rol of equipment, proc on of the different units d of study based on ge eld of study. BRESULTS	esses and flexib s that make up th eneral secondary cols and basic of <u>CH</u> 2 h.	e industrial sy e system to m education at a concepts of ind	stems, through the eet the needs of a level found in dustrial
RGJ407 They understand the information RGJ407 They understand the information LEARNING ACTIVITIES Individual study and work, tests a	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC Industrial networks, fieldbus, co	rol of equipment, proc on of the different units d of study based on ge eld of study. B RESULTS mmunication protoc	esses and flexib s that make up th eneral secondary cols and basic of CH 2 h. 2 h.	e industrial sy e system to m e education at a concepts of ind <u>NCH</u> 1 h.	stems, through the eet the needs of a level found in dustrial
RGJ407 They understand the in ommunication of the teacher in the productive sector ASIC CB1 - To have proven to underst twanced textbooks and including of RGJ407 They understand the in ommunication CEC CEC CEC CEC CEC CEC CEC CEC CEC CE	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC Industrial networks, fieldbus, co and evaluations and check points a classroom, in participatory classe ubjects	rol of equipment, proc on of the different units d of study based on ge eld of study. B RESULTS mmunication protoc	esses and flexib s that make up th eneral secondary cols and basic c CH 2 h. 2 h. 2 h.	e industrial sy e system to m e education at a concepts of ind <u>NCH</u> 1 h.	stems, through t eet the needs of a level found in dustrial <u>TH</u> 2 h. 3 h. 12 b
RGJ407 They understand the in ommunication of the teacher in the productive sector ASIC CB1 - To have proven to underst tvanced textbooks and including of tvanced textbooks and including of t	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC Industrial networks, fieldbus, contained and evaluations and check points a classroom, in participatory classe ubjects for lab practice	rol of equipment, proc on of the different units d of study based on ge eld of study. B RESULTS mmunication protoc	esses and flexib a that make up the eneral secondary cols and basic of CH 2 h. 2 h. 6 h.	e industrial sy the system to m e ducation at a concepts of ind <u>NCH</u> 1 h. 6 h.	stems, through the eet the needs of a level found in dustrial TH 2 h. 3 h. 12 h.
RGJ407 They understand the informunication REARNING ACTIVITIES Individual study and work, tests a Presentation of the teacher in the procedures associated with the sile Individual or team workshop and/ EVALUATION SYSTEM	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC Industrial networks, fieldbus, co and evaluations and check points e classroom, in participatory classe ubjects for lab practice	rol of equipment, proc on of the different units d of study based on ge eld of study. RESULTS mmunication protoc es, of concepts and MAKE-UP MECH	esses and flexib a that make up the eneral secondary cols and basic of <i>CH</i> 2 h. 2 h. 2 h. 6 h. ANISMS	e industrial syme system to m e ducation at a concepts of ind <u>NCH</u> 1 h. 6 h.	stems, through the eet the needs of a level found in dustrial TH 2 h. 3 h. 12 h.
RGJ407 They understand the information of the sector ASIC CB1 - To have proven to understand the information of the sector RGJ407 They understand the information of the sector LEARNING ACTIVITIES Individual study and work, tests a Presentation of the teacher in the procedures associated with the sector Individual or team workshop and/ EVALUATION SYSTEM Individual written and oral tests to the subject	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC Industrial networks, fieldbus, co and evaluations and check points a classroom, in participatory classe ubjects for lab practice	rol of equipment, proc on of the different units d of study based on ge eld of study. BRESULTS mmunication protoc es, of concepts and MAKE-UP MECH Reports of solving simulation practice	esses and flexib s that make up the eneral secondary cols and basic of <i>CH</i> 2 h. 2 h. 6 h. ANISMS	e industrial sy e system to m e education at a concepts of ind <u>NCH</u> 1 h. 6 h.	stems, through the eet the needs of a level found in dustrial TH 2 h. 3 h. 12 h.
RGJ407 They understand the information RGJ407 They understand the information RGJ407 They understand the information LEARNING ACTIVITIES Individual study and work, tests a Presentation of the teacher in the procedures associated with the sindividual or team workshop and/ EVALUATION SYSTEM Individual written and oral tests to the subject Reports of solving exercises, cas	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC Industrial networks, fieldbus, co and evaluations and check points a classroom, in participatory classe ubjects for lab practice in a sesses technical skills of 40% e studies, computer 60%	rol of equipment, proc on of the different units d of study based on ge eld of study. BRESULTS mmunication protoc es, of concepts and <u>MAKE-UP MECH</u> Reports of solving simulation practice Comments: Final	esses and flexib s that make up the eneral secondary cols and basic of <i>CH</i> 2 h. 2 h. 2 h. 6 h. ANISMS exercises, case es and laborator mark = % 25 or	e industrial sy e system to m e education at a concepts of ind NCH 1 h. 6 h. e studies, comp y practices dinary mark + 5	stems, through the eet the needs of a level found in dustrial TH 2 h. 3 h. 12 h. witer practices, % 75 retake mark
RGJ407 They understand the information RGJ407 They understand the informunication LEARNING ACTIVITIES Individual study and work, tests a Presentation of the teacher in the procedures associated with the still individual or team workshop and/ EVALUATION SYSTEM Individual written and oral tests to the subject Reports of solving exercises, cas practices, simulation practices and practices a	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC INTERPOLICIES INTERPOLICIES INTERPOLICIES INTERPOLICIES INTERPOLICIES	rol of equipment, proc on of the different units d of study based on ge eld of study. B RESULTS mmunication protoc es, of concepts and <u>MAKE-UP MECH</u> Reports of solving simulation practice Comments: Final Only the individual	esses and flexib s that make up the eneral secondary cols and basic condition 2 h. 2 h. 2 h. 6 h. ANISMS exercises, case es and laborator mark = % 25 ord test has a retake	e industrial sy e system to m e ducation at a concepts of ind <i>NCH</i> 1 h. 6 h. e studies, comp y practices dinary mark + S	stems, through ti eet the needs of a level found in dustrial TH 2 h. 3 h. 12 h. 12 h. witer practices, % 75 retake mark
tegration of hardware and software productive sector ASIC _CB1 - To have proven to underst twanced textbooks and including of the teacher in the procedures associated with the sindividual or team workshop and/ EVALUATION SYSTEM Individual written and oral tests to the subject Reports of solving exercises, cas practices, simulation practices and the subject	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC INTERPOLICIES INTERPOLICIES INTERPOLICIES INTERPOLICIES	rol of equipment, proc on of the different units d of study based on ge eld of study. B RESULTS mmunication protoc es, of concepts and <u>MAKE-UP MECH</u> Reports of solving simulation practice Comments: Final Only the individual to	esses and flexib a that make up the eneral secondary cols and basic control 2 h. 2 h. 2 h. 6 h. ANISMS exercises, case es and laborator mark = % 25 ord test has a retake	e industrial sy e system to m e ducation at a concepts of ind <i>NCH</i> 1 h. 6 h. e studies, comp y practices dinary mark + S	stems, through ti eet the needs of a level found in dustrial TH 2 h. 3 h. 12 h. 12 h. witer practices, % 75 retake mark
RGJ407 They understand the informunication REARNING ACTIVITIES Individual study and work, tests a Presentation of the teacher in the procedures associated with the s Individual or team workshop and/ EVALUATION SYSTEM Individual written and oral tests to the subject Reports of solving exercises, cas practices, simulation practices and	e projects of automation and cont re in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC Industrial networks, fieldbus, cont and evaluations and check points e classroom, in participatory classe ubjects for lab practice w o assess technical skills of 40% e studies, computer 60% id laboratory practices	rol of equipment, proc on of the different units d of study based on ge eld of study. B RESULTS mmunication protoc es, of concepts and <u>MAKE-UP MECH</u> Reports of solving simulation practice Comments: Final Only the individual to	eneral secondary eneral secondary cols and basic of <u>CH</u> 2 h. 2 h. 6 h. ANISMS exercises, case es and laborator mark = % 25 or lest has a retake	e industrial sy e system to m e ducation at a concepts of ind <i>NCH</i> 1 h. 6 h. 9 studies, comp y practices dinary mark + 9 9 option.	stems, through t eet the needs of a level found in dustrial 7H 2 h. 3 h. 12 h. 12 h. vuter practices, % 75 retake mark
RGJ407 They understand the informunication REARNING ACTIVITIES Individual study and work, tests a Presentation of the teacher in the procedures associated with the s Individual or team workshop and/ EVALUATION SYSTEM Individual written and oral tests to the subject Reports of solving exercises, cas practices, simulation practices and H - Class hours: 10 h. CH - Non-class hours: 7 b	e projects of automation and contre in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC INTERPOLICY INTERPOLICY INTERPOLICY OF CONTREMENTATION INTERPOLICY OF	rol of equipment, proc on of the different units d of study based on ge eld of study. BRESULTS mmunication protoc es, of concepts and <u>MAKE-UP MECH</u> Reports of solving simulation practice Comments: Final Only the individual f	eneral secondary eneral secondary cols and basic of <i>CH</i> 2 h. 2 h. 6 h. ANISMS exercises, case es and laborator mark = % 25 or test has a retake	e industrial sy e system to m e ducation at a concepts of ind <i>NCH</i> 1 h. 6 h. e studies, comp y practices dinary mark + 9 e option.	stems, through ti eet the needs of a level found in dustrial 7H 2 h. 3 h. 12 h. 12 h. witer practices, % 75 retake mark
RGJ407 They understand the it RGJ407 They understand the it Individual study and work, tests a Presentation of the teacher in the Individual study and work, tests a Presentation of the teacher in the Individual or team workshop and/ EVALUATION SYSTEM Individual written and oral tests to the subject Reports of solving exercises, cas practices, simulation practices an H - Class hours: 10 h. CH - Non-class hours: 7 h. H - Total hours: 17 h H	e projects of automation and contre in order to optimize the operation and and have knowledge in a field concepts at the forefront of their field LEARNINC Industrial networks, fieldbus, co and evaluations and check points to classroom, in participatory classe ubjects for lab practice W to assess technical skills of 40% to astudies, computer 60% ad laboratory practices	rol of equipment, proc on of the different units d of study based on ge eld of study. BRESULTS mmunication protoc es, of concepts and MAKE-UP MECH Reports of solving simulation practice Comments: Final Only the individual f	eneral secondary eneral secondary cols and basic of <i>CH</i> 2 h. 2 h. 6 h. ANISMS exercises, case es and laborator mark = % 25 or test has a retake	e industrial sy the system to m e education at a concepts of ind <i>NCH</i> 1 h. 6 h. 9 studies, comp y practices dinary mark + 9 9 option.	stems, through ti eet the needs of a level found in dustrial 7H 2 h. 3 h. 12 h. 12 h. witer practices, % 75 retake mark

RGJ408 They design, develop and validate HMI interfaces with specified requirements			
LEARNING ACTIVITIES	СН	NCH	тн



Goi Eskola Politeknikoa | Mondragon Unibertsitatea Course: 2022 / 2023 - Course planning

Development, writing and presentation of memorandums, re Relating to projects/POPBLs carried out individually or in tea	7 h.	4,5 h.	11,5 h.			
Presentation of the teacher in the classroom, in participatory procedures associated with the subjects	y classe	es, of concepts and	2 h.	2 h.	4 h.	
Individual or team workshop and/or lab practice			4,5 h.	2,5 h.	7 h.	
EVALUATION SYSTEM	w	MAKE-UP MECHANISI	MS			
Individual written and oral tests to assess technical skills of the subject	64%	Individual written and or subject	al tests to a	issess technic	al skills of the	
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	16%	Comments: Final mark Only the individual test ha	= % 25 ord as retake op	inary mark + 9 otion.	% 75 retake mark.	
Technical skills, involvement in the project, finished work, 20% obtained results, handed documentation, presentation and technical defence Comments: The practical exercise must be approved to avaluate the individual test.						
CH - Class hours: 13,5 h. NCH - Non-class hours: 9 h. TH - Total hours: 22,5 h.						
RGJ409 They design the automation and supervision system of a real application, assessing the risk, defining and implementing the technical solution required according EN ISO 13.849-1 relative to machine safety.						

LEARNING ACTIVITIES			СН	NCH	тн
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams			6 h.	4 h.	10 h.
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects		25 h.	16 h.	41 h.	
Individual or team workshop and/or lab practice			6 h.	4 h.	10 h.
EVALUATION SYSTEM	w	MAKE-UP MECHANIS	MS		
Individual written and oral tests to assess technical skills or the subject	56%	Individual written and o subject	ral tests to	assess technic	cal skills of the
ports of solving exercises, case studies, computer 14% Comments: Final market computer 0 actices, simulation practices and laboratory practices 0 only the individual test		as retake o	linary mark + ' ption.	% 75 retake mark	
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence					
Comments: The practical exercise must be approved to ave the individual test.	valuate				
CH - Class hours: 37 h. NCH - Non-class hours: 24 h.					
TH - Total hours: 61 h.					

RGJ414 They assume responsibilities in the team, organizing and planning the tasks to be developed, dealing with	
contingencies and encouraging the participation of its members.	

LEARNING ACTIVITIES			СН	NCH	тн
Development, writing and presentation of memorandums, reports, audiovisual material, etc Relating to projects/POPBLs carried out individually or in teams			2 h.	1 h.	3 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANIS	MS		
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	100%	Technical skills, involve results, handed docum defence Comments: Continuou	ement in the entation, pr	e project, finish resentation and ent. Retake is	ed work, obtai d technical not foreseen.

Goi Eskola Politeknikoa Escuela Politécnica Superior

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

					
EARNING ACTIVITIES	norte ci	idiovigual material ata	2 h	1 b	2 h
Relating to projects/POPBLs carried out individually or in te	ams	Julovisual material, etc.	2 11.	1 11.	511.
VALUATION SYSTEM	W	MAKE-UP MECHANIS	MS		
echnical skills, involvement in the project, finished work, btained results, handed documentation, presentation and achnical defence	100%	Technical skills, involve results, handed docume defence Comments: Continuous	ment in the entation, pi s assessm	e project, finishe resentation and ent. Retake is r	ed work, obtai technical not foreseen.
- Class hours: 2 h. H - Non-class hours: 1 h. - Total hours: 3 h.					
EJ416 They define the problem, the development of the tifying each of them, making a correct use of the lange EARNING ACTIVITIES	he soluti uage, in	on, as well as the conclu writing.	CH	NCH	ny, arguing an TH
evelopment, writing and presentation of memorandums, re elating to projects/POPBLs carried out individually or in te	eports, au ams	udiovisual material, etc.	1 n.	2 n.	3 n.
VALUATION SYSTEM	W	MAKE-UP MECHANIS	MS		
echnical skills, involvement in the project, finished work, otained results, handed documentation, presentation and chnical defence	100%	Technical skills, involve results, handed docume defence Comments: Continuous	ment in the entation, pr s assessm	e project, finishe resentation and ent. Retake is r	ed work, obtai technical not foreseen.
- Class hours: 1 h.					
H - Non-class hours: 2 h. - Total hours: 3 h.					
H - Non-class hours: 2 h. - Total hours: 3 h.					
H - Non-class hours: 2 h. - Total hours: 3 h. GJ417 They define the problem, the development of the tifying each one of them, and making a correct use of EARNING ACTIVITIES	he soluti the lang	on, as well as the conclu uage, orally.	usions in a	an effective wa	iy, arguing a <i>TH</i>
H - Non-class hours: 2 h. - Total hours: 3 h. EJ417 They define the problem, the development of the tifying each one of them, and making a correct use of EARNING ACTIVITIES evelopment, writing and presentation of memorandums, re	he soluti the lang	on, as well as the concluuage, orally.	Isions in a	an effective wa NCH 1 h.	iy, arguing a <u>TH</u> 3 h.
H - Non-class hours: 2 h. - Total hours: 3 h. GJ417 They define the problem, the development of the tifying each one of them, and making a correct use of EARNING ACTIVITIES evelopment, writing and presentation of memorandums, re elating to projects/POPBLs carried out individually or in te	he soluti the lang eports, au ams	on, as well as the concluuage, orally. udiovisual material, etc.	Isions in a CH 2 h.	an effective wa <u>NCH</u> 1 h.	ty, arguing a <i>TH</i> 3 h.
H - Non-class hours: 2 h. - Total hours: 3 h. GJ417 They define the problem, the development of the tifying each one of them, and making a correct use of EARNING ACTIVITIES evelopment, writing and presentation of memorandums, re elating to projects/POPBLs carried out individually or in te VALUATION SYSTEM	he soluti the lang eports, au ams W	on, as well as the concluuage, orally. udiovisual material, etc. MAKE-UP MECHANIS	CH 2 h. MS	an effective wa NCH 1 h.	ty, arguing a <u>TH</u> 3 h.
H - Non-class hours: 2 h. - Total hours: 3 h. SJ417 They define the problem, the development of the tifying each one of them, and making a correct use of EARNING ACTIVITIES evelopment, writing and presentation of memorandums, re elating to projects/POPBLs carried out individually or in te VALUATION SYSTEM achnical skills, involvement in the project, finished work, tained results, handed documentation, presentation and chnical defence	he soluti the lang eports, au ams <u>w</u> 100%	on, as well as the conclu uage, orally. udiovisual material, etc. <u>MAKE-UP MECHANIS</u> Technical skills, involve results, handed docume defence Comments: Continuous	CH 2 h. MS ment in the entation, pr s assessm	an effective wa	TH 3 h. ed work, obtain technical



CONTENTS

1.-Advanced programming of PLCs

1.1-PLC programmingenvironment.

1.2-PLC basic concepts

1.3-Advanced Programming (Numerical Processing, Analog Processing, FC, FB and Variables)

2-Industrial Communications (Industrial Ethernet, industrial field buses, OPC UA)

3.-HMIs, monitoring and control.

4.-Machine Safety

4.1-Directives and Regulations (2006/42 / CE, CE marked, UNE-EN ISO12.100, UNE-EN ISO 13849-1: 2008)

5 .- Introduction to "Motion control"

LEARNING RESOURCES AND BIBLIOGRAPHY			
Learning resources	Bibliography		
Moodle Platform Lab practical training	https://www.br-automation.com/en/academy/classroom-learning/train ing-modules/		
Programmes	https://www.br-automation.com/en/academy/virtual-classroom/br-tuto rial-portal/		
	PLCs OMRON: https://sites.google.com/view/omron-spain-education/ p%C3%A1gina-principal/cursos/sysmac-automat-avanzada		
	Web Omron: https://automation.omron.com/es/us/support/resources/d ownloads.ht ml?filters=type==document&filters=type.document==type. document&page=1&pageSize=10		
	http://katalogoa.mondragon.edu/ianium-hin/ianium_login_opac_re_ln		

http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_ln k. pl?grupo=MECATRONICA41&ejecuta=5&_ST